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ABSTRACT

To seek resolution of problems in providing education for youth and adults oriented toward the world of work, the Massachusetts Advisory Council on Education (MACE) undertook a study of vocational-technical education as a major project. This publication contains the major papers and prepared reactions to these papers, which were presented at a 42-member conference, and constitutes the basis for a report announced as ED 029 107. Major papers were: (1) "Vocational and Technical Education--Its Meaning" by C.J. Schaefer, (2) "The Development of Vocational Education in America: An Historical Overview" by V.P. Lannie, (3) "A Behavioral View of Vocational-Technical Education" by J.W. Altman, (4) "Sociological Perspectives and Vocational-Technical Education" by M.B. Sussman, (5) "Decisions for Vocational Education: An Economist's View" by M.J. Bowman, (6) "Manpower Analysis and Vocational Education: Problems and Perspectives" by I. Berg, (7) "Vocation, Education, and Guidance" by R.C. Hummel, (8) "Vocational Education: Is It More Than Education for a Vocation?" by B. Shimberg, (9) "The Social Context, Poverty, and Vocational Education" by R.A. Gibboney, (10) "But Readjust We Must--Teacher Education" by E.L. Minelli and T.M. Benton, and a concluding statement by J.J. Kaufman. (DM)

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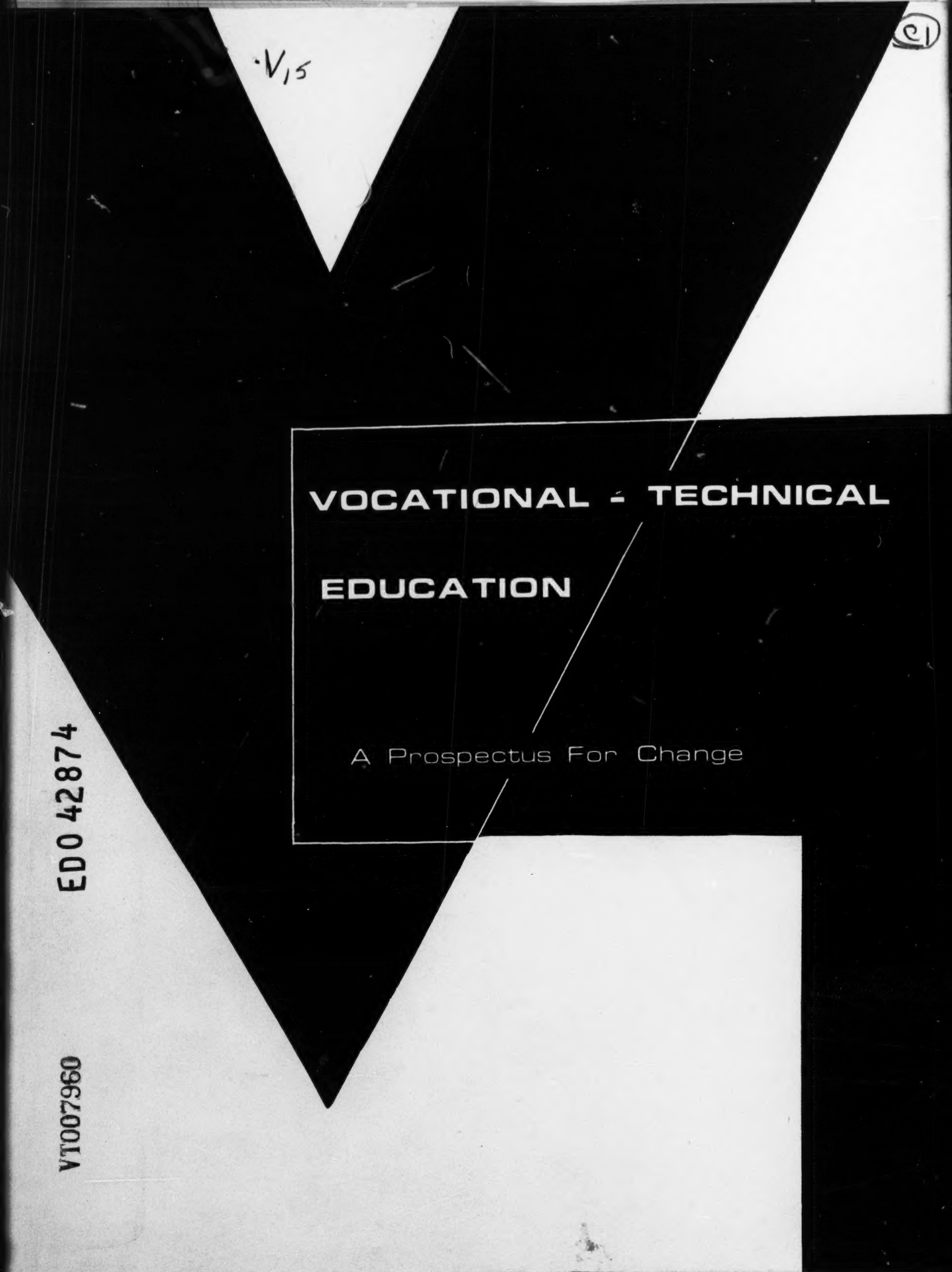

VOCATIONAL - TECHNICAL EDUCATION

A Prospectus For Change

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A Prospectus For Change

Edited by

Carl J. Schaefer
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Boston

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PREFACE

One of the overiding problems facing Massachusetts is providing education for youth and adults oriented towards the world of work.

Recognizing this, the Massachusetts Advisory Council on Education undertook a study of Vocational-Technical Education as one of its first projects. This publication contains the major papers, and the reactions to these papers, which were presented at a symposium conducted by the study staff in Boston on November 28, and 29, 1967. The scope of these papers constitutes the basis for a forthcoming report intended to suggest how to make education more relevant to the needs, interests, and aspirations of all children and youth.

The Commonwealth has a pioneering history in vocational education. Under the leadership of former Governor William L. Douglas, the General Court adopted a system of industrial education as early as 1905. As a result, Massachusetts became the first state to provide free industrial education. The Advisory Council's Vocational-Technical Education Study represents another step in that pioneering tradition.

This interim publication was assembled by Carl J. Schaefer, Chairman, Department of Vocational Education, Rutgers University, and Jacob J. Kaufman, Director, Institute for Research on Human Resources, Pennsylvania State University, Director and Co-director of the present study. It represents the work of many individuals who prepared the materials and served as discussants and observers. This report is a group effort and the credit for it belongs to the symposium participants.

The most promising features of the symposium and the papers were interchange, communication, and focus on the problems of education of youth who will become productive members of society. The concern of all participants, regardless of academic orientation, illustrates that educators need not live and work in isolation. A combined approach to the problems we face will surely benefit all.

A Prospectus for Change is intended to provide the reader with a broad perspective on occupational education. This interim document will be followed by the final report of the Vocational-Technical Education Study.

William C. Gaige
Director
Advisory Council on Education

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INTRODUCTION

Carl J. Schaefer*

VOCATIONAL AND TECHNICAL EDUCATION -- ITS MEANING

The quest for knowledge has always been, and will continue to be, a driving force. Man has distinguished himself as a vast consumer of the "stuff" that makes for his intellectual well being. The educator, in his broadest role, has been the facilitator of the vast array and accumulation of man's intellectual stock pile. The educator holds the key position to disseminate knowledge both in kind and amount. Undoubtedly it was the dilemma of the "kind and amount" of education that prompted C. P. Snow (1963) to present his epic lecture on the two cultures -- exemplified by humanists and the physical scientists.[1] To Snow, the humanist at one pole and the physical scientist at the other, represented the extremes to which education has gone in our modern society. Snow develops the thesis that the dichotomy has grown so great that these two groups are working at what seems to be cross purposes which is dangerous, perhaps fatal, for civilization.

The educator (especially in the secondary school) appears to be placed squarely in the middle of the forces that have the responsibility to develop the intelligence of the individual. It is not a mere dilemma of how to educate, but what to educate for. It is more of a dilemma of the means by which public education can meet the needs not only of "all the boys and girls" but also of all the people so as to assure them a productive yet rewarding part in our present day society. It is the "whole" individual of Dewey and the "education for life" of Prosser that concerns Snow and others like him. Such a plight requires the skill of the alchemist to compound the knowledge of the sociologist, the psychologist, the economist, the historian, and others so as to effectuate a successful process of education for all who are locked into the system. In recent years educators in general have stubbornly ignored the contributions of those disciplines that relate to the daily needs of boys and girls. Communication between educators and those from related disciplines has never flourished, and the present period in which public education sees itself makes the void in communications even more apparent. It is time that these social and behavioral scientists, representing a distinct body of knowledge, make known their contributions to the educational endeavor. Precisely stated, the problem is to make education relevant to the needs of all boys and girls. And, by chance, if one should think this is not the problem, the test is obvious -- just ask youth itself.

To develop the point still further, society needs to be reminded that there is more than one means to an education. The classical notion, that college is the pinnacle of attainment for all, overshadows the efforts being made to provide for those who neither aspire to, nor can achieve at, the collegiate level. John Gardner, Secretary of Health, Education, and Welfare, has said:

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> An excellent plumber is infinitely more admirable than an incompetent philosopher. The society which scorns excellence in plumbing because plumbing is a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water.

Education then, can well become relevant to youth who seek status through excellence in plumbing. When educators recognize this and communicate the needs of education to both future plumbers and future philosophers they will earn the right to stand between both cultures.

VOCATIONAL AND TECHNICAL EDUCATION

The specific question is: what is the role of vocational and technical education[2] in meeting the needs of boys and girls? Granted that a large percentage of youth will pursue employment upon graduation from high school, James B. Conant has pointed out that:

> . . . the academic talented pupils constitute not more than 20 per cent and often not more than 15 per cent of the student body in the type of school I am discussing. What about the courses that ought to be elected by the other 85 per cent or so of the student body? To answer the question in a few words and to oversimplify a complex issue, I would say that the other pupils should elect a consistent program directed towards the development of a specialized talent or a vocation. (1958)

We are then dealing with a large percentage of youth and not the mere eight to ten per cent as presently representing vocational and technical education nationally. This clearly indicates that the magnitude of the problem is far greater than most have realized or the education community has been ready to admit. The problem takes on even greater meaning when it is realized that today, out of every ten youngsters who enter first grade, three will not finish high school some twelve years later. Of the seven who do graduate from high school, three will go to work immediately and four will enter college and only two of the four will graduate with a baccalaureate degree. In other words, two out of the original ten will achieve as Conant predicts.

By definition, vocational education perceives itself as something far greater than the mere acquisition of manipulative skills. The U. S. Office of Education, defines it as follows:

> Vocational Education helps to give definite purpose and meaning to education by relating training to specific occupational goals. It is more inclusive than training for job skills. It also developes abilities, understandings, attitudes, work habits, and appreciations which contribute to a satisfying and productive life. (1957)

Despite this definition the fact is that many educators, the public, and even parents associate the manipulative aspect almost entirely with vocational education. Moreover, it is evident that vocational educators themselves have not made clear that vocational education need not create a dualism in our educational system. Unfortunately the evidence of separate vocational schools implies at least some dichotomy when actually vocational education should be an integral part of a well rounded program of education aimed at the development of youth for full participation in society.

Most of the contributors in this volume have also viewed vocational education in this broader sense and not merely as a means for developing specific skills. They have viewed vocational education as a "way of learning" and not as an end in itself.

THE RELATED FIELDS

Probably the greatest untapped resource to be employed to make education relevant to the needs of youth has been the contributions of what has been called the related disciplines. Unfortunately, many educators themselves have been prepared in a narrow or restricted sense. This is not to say they do not know subject matter. Nor is it being suggested that they become social and behavioral scientists. But it is being said and suggested that educators need the help of those within these disciplines. Such help has heretofore not been solicited.

It is for this reason that the papers presented in this volume were prepared. A careful reading of these papers reveals that, in an historical sense, this country tends to develop the appropriate legislation to meet the needs of society of the day. It is apparent that the Smith-Hughes Act and the Vocational Education Act of 1963 came as a response to the demands of certain groups in our society. It might require that, in 1968, five years after the latter legislation was enacted further changes in the law are necessary.

An examination of the papers from the behavioral and social scientists indicates substantial support for the substitution of behavioral objectives in education rather than specific skill objectives. It is recognized that educators, like other decision-makers, are faced with limited resources which must be carefully allocated among alternative objectives. Manpower needs are explored and the role that guidance can play in the educational system is discussed at length.

If vocational education, as many of the seminar participants suggest, is to move in new directions the curriculum must be reexamined and innovative curricula must be developed. Administrators and teachers alike must be trained to meet these new educational objectives. All of these issues are also discussed in this volume.

The authors of the various papers present some rather provocative notions. Woven throughout will be found not only a willingness but also an outright commitment to assist in the very endeavor to which all educators are dedicated -- the making of education relevant to the needs of our youth.

FOOTNOTES

[1] Rede Lecture at Cambridge (May 1959).

[2] The term "vocational and technical" is usually used in a singular sense when spoken of in the profession.

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HISTORY

Vincent P. Lannie*

THE DEVELOPMENT OF VOCATIONAL EDUCATION IN AMERICA: AN HISTORICAL OVERVIEW

"Americans have always loved a fair" declares Lawrence Cremin in his The Transformation of the School, and the Philadelphia Centennial Exposition of 1876 was no exception. The United States was in the process of making great strides since the Civil War and its citizens evinced a great national pride as they moved about the Exposition's pavillions. Schoolmen were impressed particularly with the educational exhibits which documented over half a century of education progress. But it was the Russian exhibit which stole the show, converted two American educators, and became a catalyst for vocational education in the United States.

The Imperial Technical School of Moscow, founded in 1868 and under the direction of Victor Della Vos, achieved a breakthrough in vocational education. Before this time, students received theoretical instruction in "construction shops" where they worked along side paid workmen in producing marketable goods. Because Della Vos thought this apprenticeship system to be ineffective as well as inefficient, he organized "instruction shops" as a necessary prerequisite before students could work in the "construction shops." In developing this innovation, he maintained that the mastery of any art-drawing, music, painting--was attained "only when the first attempts are subject to a law of gradation, the pupil following a definite method or school, and surmounting, little by little and by certain degrees, the difficulties encountered." Since a method of study had been elaborated for these arts, reasoned Della Vos as he made his pedagogical leap, why could not "a logical method of teaching . . . (the) mechanic arts" be evolved that would benefit students and give practical instruction to workers as well.[1] With this idea in mind, he organized separate "instruction shops" for carpentry, joinery, blacksmithing, and metal turning. Each shop presented a course of graded exercises in a logical order and according to their difficulty. In the same way were arranged the appropriate models, drawings, and tools for each mechanical art. No attempt was made to apply the exercises or the tools in constructing any useful article, and in time the "construction shops" were removed from the school. Della Vos became convinced that the course of studies followed in the "instruction shops" obviated the need for the apprenticeship training of the "construction shops."

In the United States, John D. Runkle, President of the Massachusetts Institute of Technology, faced many of Della Vos' problems but had arrived at no adequate solution. At M.I.T., he observed that students who had practical training readily found positions after graduation while those who had none required additional apprenticeship training before they could secure a job. But while examining models dealing with chipping, filing, forging, and machine tool work at the Russian exhibit, he "saw at once that they were not parts of machines, but simply graded models for teaching the manipulations in those arts." At once the solution to the problem came to his mind; "a plain distinction (existed) between a mechanic art and its application in some special trade . . ."[2] Immediately Runkle decided that M.I.T. must construct shops in the same manner that science laboratories were built and further judged that the manual arts must become a part of the public school's general program of education. In a report that he gave on "The Manual Element in Education," he placed manual training on a philosophical rationale by declaring that it constituted "the only true and philosophical key to all industrial education." If the arts of any particular industry could be formulated into an educational method, he reasoned, "we have only to group about these art courses such other subjects of study as obviously pertain to this industry to have a scheme which shall most surely and directly fit the student both in theory and practice to enter upon its pursuit." As soon as he returned to M.I.T., Runkle persuaded the trustees to establish several "instruction shops" for engineering students as well as a secondary "School of Mechanic Arts" to give instruction in the manual arts "for those who wish to enter upon industrial pursuits rather than to become scientific engineers."[3]

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The other convert to Della Vos' viewpoint had been in the process of conversion before 1876. Calvin M. Woodward, Professor of mathematics and applied mechanics at Washington University in St. Louis and later Dean of the University's Polytechnic School, quickly learned that his students had very little practical knowledge about mechanical tools. When he discovered that his students could not even visualize simple mechanical forms, he attempted to show them how to use these tools with no particular vocational goal in mind. During the early 1870's, Woodward developed his ideas at Washington University -- ideas which received more definite form as a result of studying the views of Della Vos and Runkle. Woodward acknowledged that Russia had "solved the problem of tool instruction" and had made it a science. While others had agreed "that practice in using tools and testing materials should go hand in hand with theory," it was Russia that "first conceived and tested the idea of analyzing tool practice into its elements and teaching the elements abstractly to a class." Here was a radical departure from the apprenticeship system under which "the learner acquires the 'arts' involved in a piece of work incidentally, and generally without a conscious analysis."[4] In manual training schools which Woodward hoped would be established, the "arts" would be made the "direct object of a student's attention" and "their subsequent combination (which may or may not follow in his school experience)" would be relatively simple. Nor would such instruction in the manual arts be narrowly utilitarian, for Woodward insisted that manual training belonged within the general school curriculum and that instruction in a particular trade was too narrow for such a purpose. In fact, the purpose of Washington University's Manual Training School that opened in 1880 was to abstract the mechanical processes, manual arts, and all necessary tools, implement this goal into a systematic course of instruction, and then incorporate it into the school's general system of education. "Thus, without teaching any one trade, we teach the essential mechanical principles of all." To the criticism that such an education would produce a "'Jack-of-all-trades, but Master of none,'" Woodward countered that "good Jack-of-all-trades may easily become master of any."[5]

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With the implementation of Della Vos' insights by Runkle and especially by Woodward, the manual training stage of vocational education had its beginning in the United States. But why should it have begun at all? What was different in the 1870's from earlier American history? In essence, the difference was a full-blast forging of post-Civil War America into an industrial society from its earlier agricultural beginnings. Of all the changes that occurred in the country, challenged John Dewey in his The School and Society, the most important was "the industrial one."[6] Such a change was not only national but international in scope and nothing short of a revolution. A vast system of manufacturing centers mushroomed to supply an ever-expanding national and world market as cheaper and more rapid means of communication and distribution were in the process of development. As the nation became more industrialized, it became more urbanized. Within this transformation of American society, everything seemed to be in a state of flux. Cities attracted millions of persons, immigrants as well as rural Americans. A hideous conglomeration of hunger, vice, disease, and crime transformed large parts of these cities into ghettos of gloom and despair. All across the land, many complained that the schools did not meet the needs of rural or urban youth; they were too book-oriented and even this "intellectual" education was more often than not "singsong drill, rote repetition, and meaningless verbiage."[7] Youngsters left school as soon as they could and many of them never completed the eighth grade.

It was obvious also that family life became disrupted as economic and social dislocation quickened its pace. With this change in family life, came a change in the educational functions of the family. Social settlement workers such as Jane Addams were aware of this fact while Dewey repeatedly stressed it in his many writings. Just before the turn of the 20th century, Dewey reminded his readers that it was not distant history "when the household was practically the center in which were carried on, or about which were clustered, all the typical forms of industrial occupation." In former times, children were exposed to the complete industrial processes of a variety of articles -- "from the killing of the animal and the trying of fat, to the making of wicks and dipping of candles."[8] Of course, together with the family, Dewey could have added that the apprenticehip system also had played a crucial role in the economic and educational life of a bygone America. And too, something had happened to apprenticeship as well as to the family structure.

Apprenticeship had its historical antecedents in medieval Europe. In England, the many and varied local regulations and customs concerning apprenticeship were gradually codified in the 16th and 17th centuries.[9] When the English colonists emigrated to American shores in the early 17th century, they took the apprenticeship system with them as part of their "mental baggage" and adapted it according to the environmental needs of the new world. Although English apprenticeship basically provided only a home and some kind of vocational training for those "bound out," the colonists strengthened and extended the dimension of apprenticeship responsibility. Whether apprenticeship was voluntary or involuntary, colonial legislation gradually began to emphasize two interrelated elements in apprenticeship. On the one hand, children had to be trained in vocationally useful "employments" (and not useless occupations such as the minding of cattle), and on the other hand, masters had to teach their apprentices a fundamental literacy. With this extension, the apprenticeship system came to be viewed not only as a way to supply skilled labor but also as a means by which youngsters would receive a rudimentary education. The colonial legislation of the period, especially in New England, corraborates this point of view. The Massachusetts law of 1642, strengthened five years later by the famous "Old Deluder" law, deplored the great neglect of many parents and masters "in training up their children in labor and learning and other employments." As a result, the General Court ordered that negligent parents and masters, under penalty of fines and even removal of children from their custody, provide adequate vocational training and teach them "to read and understand the principles of religion and the capital laws of the country."[10] This dual training and educational responsibility was more explicitly stated in a New Plymouth Order promulgated in 1671. Parents and masters were ordered to "bring up their children and apprentices in some honest lawful calling, labour or employment" and to teach them "to read the Scriptures, and other profitable books printed in the

English tongue and the knowledge of the capital laws."[11] Such an educational mandate reveals the influence of Augustinian dualism upon the colonial mind, a tradition that marked Christians not only as citizens of the "earthly city" but inheritors of the "heavenly city" as well. Children thus had to become familiar with their civic responsibilities as well as with their spiritual obligations to prepare them for the next and more important life.[12]

In the new world, therefore, apprenticeship evolved from a system of trade preparation to include an educational dimension; vocational training on the one hand, and civic, moral, and religious instruction on the other hand. "Apprenticeship was thus not a mere means of acquiring trade efficiency," declares Paul Douglas in American Apprenticeship and Industrial Education, "but it was a preparation for citizenship and for life."[13]

As time went on, however, many masters felt hindered by the educational requirements of apprenticeship and were inclined to view the system as essentially a source of labor. Either they had no time for these obligations or they simply were not qualified to implement them. Increasingly in the 18th century, masters began to delegate their educational responsibilities to formal schools -- usually evening schools -- wherein their charges would receive "a certain amount of reading, writing, and ciphering."[14] In an interesting historical turn-about, apprenticeship took a practical step back to its initial training aspect; masters continued to handle vocational training while schools began to instruct youngsters in a general education. It remained for the first half of the 19th century, with its increasing industrialization, to rupture the training aspect of apprenticeship and plunge it into a painful decline.

Although apprenticeship vocational training continued unhampered up to the opening decades of the 19th century, the beginnings of industrial development were clearly discernable by the 1820's. Moreover, America's initial stage of industrial transformation would not be completed until the eve of the Civil War. Improvements in transportation, the growth of cities, and the extension of credit began to alter the economy. Canals, turnpikes, and later railroads helped to bring the population together and thus created large markets for more and more manufactured goods. The small, traditional craft shop of a master with his few journeymen and apprentices could not supply sufficient labor for this kind of expanding market. As an increasing number of factories began to mass-produce goods for broad distribution, there grew up a new economic need for different kinds of workers. No longer was the skilled artisan the mainstay of the newly-emerging industrial system. Rather the need for unskilled workers -- often women, children, and recent immigrants -- became more pressing in a system that required physical strength or limited manual dexterity to perform boring and never-changing tasks within the new division of labor. To the skilled worker, industrialism appeared as a real threat. Many traditional occupations became obsolete while skilled workers in other areas of employment found their wages, status, and independence in decline. "The wealthy monopolists are anxious to crush those who are doing a small business and get them out of the way," bemoaned one observer in the 1840's, "in order that they may fix prices to suit themselves."[15] "Machinery has taken almost entire possession of the manufacture of cloth," declared the Working Man's Advocate in 1844, and warned that it was making steady progress in other areas of production.[16] As mechanization replaced the craft shop with the more impersonal factory, the skilled worker lost his earlier position in the social and economic structure of society. He no longer sold a product but began to sell his labor and nothing more. Owning few tools and possessing no adequate financial resources, both skilled and unskilled workers in pre-Civil War America realized that in a very real sense they had become wage earners dependent upon a new economic system of production.

When factory owners contended that the apprenticeship system was no longer an efficient method to train the thousands of needed workers, skilled workers closed ranks in an attempt to defend their crafts and their status. In 1830, the New York Evening Journal defended mechanics (skilled artisans working at a craft within the apprenticeship system) and attacked capitalists for forcing the former out of business because of "the advantage of a large capital." The paper attacked the hiring of unskilled cheap labor which prevented "the industrious, enterprising, but perhaps indigent mechanic, from following his trade to advantage, or from following it at all." Traditional apprenticeship, with its method of advancement, was defended because of the desire of the apprentice to become a master and thus perform outstanding labor. Such a desire "increases and strengthens the appetite to become . . . adept, and gives a zest to all his efforts."[17]

But neither the Evening Journal nor any other newspaper could stem the economic tide. Fearful that their social status was waning in the face of increasing industrialization and a more complex factory system, skilled workmen organized themselves into associations for mutual help. Thus, such crafts as cabinet makers, carpenters, hatters, tailors, and shoemakers established trade organizations. In general, these groups condemned imprisonment for debt, service in the militia, paper currency, and banks while urging a shorter work week and free public education.[18] Especially was the plea for free, universal, public education aimed at improving equality of opportunity and avoiding any rigid class stratification. A group of New York workingmen felt that all children should receive the same education "under the same roof . . . where the road to distinction shall be superior industry, virtue and acquirements, without reference to descent."[19] In like manner, Robert Dale Owen, son of the English reformer and a reformer in his own right, believed "in a National System of Equal, Republican, Protective, Practical Education, the sole regenerator of a profligate age, and the only redeemer of our suffering country from the equal curses of chilling poverty and corrupting riches, of gnawing want and destroying debachery, of blind ignorance and of unprincipled intrigue." Conditioned by his own educational experience at Hofwyl, a Swiss school influenced by Pestalozzian principles, Owen believed that agricultural and trade studies should compose an important part of the school curriculum. The schools could eliminate social and economic distinctions by "combining mechanical and agricultural with literary and scientific instruction. By making every scholar a workman, and every workman a scholar. By associating cultivation and utility, the productive arts and the abstract sciences."[20]

During this same period, mechanics institutes began to provide considerable instruction in subjects relating to technical education.[21] Related to this movement was the work of the lyceums which began in the 1820's under the leadership of Josiah Holbrook. In 1826, he published the manifesto of the American lyceum which called for the furnishing of a universal and practical education. The main purpose of the lyceum originally was to provide practical, scientific instruction for workmen, and thus to prepare a more intelligent worker and a better product. The lyceum also became an important ally of popular education, and it attempted to include in the curriculum not only literary studies but also instruction in "useful and practical instruction."[22] In addition to the mechanics institutes and the lyceums, some people urged the establishment of industrial universities for the nation's farmers and mechanics. Since neither professional nor military higher education was deemed suitable for the industrial masses, these industrial universities would meet the "felt wants of each and all of the industrial classes of the nation." A series of conventions held in Illinois in 1852 and 1853 urged that an industrial university be established in every state of the union. Each of them would apply "existing knowledge directly and efficiently to all practical pursuits and professions in life, and to extend the boundaries of our present knowledge in all possible practical directions."[23] With the industrial university as the center for practical education in each of the states, other and lower institutions such as common schools, high schools, and lyceums could cooperate in an organized and joint effort in practical education.

Such efforts as mechanics institutes, lyceums, and the movement for industrial universities clearly indicate that traditional apprenticeship was in a state of deterioration. Although organized labor attempted to defend and regulate it (whereas employers attacked it as wasteful and unnecessary), the ever-increasing industrialism of the 1840's and 1850's cast it into a decreasing importance. Thus, if apprenticeship's educational role had been practically eliminated during the 18th century, by the eve of the Civil war its vocational responsibility had diminished and proved less important as a supplier of skilled labor in the United States. And just as the schools had assumed the literacy responsibility of apprenticeship during the colonial period, so during the post-Civil War period and the opening decades of the 20th century did they take over the vocational responsibility of apprenticeship. Although some questioned the educational validity of the school's growing interest in vocational training, the major argument eventually focused on the best method and curriculum to use in the teaching of practical education. In short, the question shifted from "ought" to "how."

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Despite the embittered Chicago worker who in 1887 denied that America was a land of opportunity and felt that his "children will be where I am -- that is, if I can keep them out of the gutter," others who had achieved success insisted that the United States was still a land of opportunity.[24] Perhaps it was more difficult "to start a new business of any kind today than it was" in former days, admitted Andrew Carnegie, but opportunities still abounded for hard-working, enterprising, and morally upright young people. Most American school books, especially the McGuffey readers, diligently extolled this "rags to riches" theme and set forth the appropriate criteria necessary for the quest. Adolescents were provided with the same thematic fare in the pages of Horatio Alger's success novels that told of ordinary but industrious youngsters who rose from the bottom to the top of the economic ladder. And even older folk could read from the bottom to the top of the economic ladder. And even older folk could read the adult versions of this success literature. During the 1880's and 1890's, scores of books and manuals such as The Art of Getting Money, How I Made Millions, The Road to Success, and Tact, Push, and Principle flooded the market to give their particular formulas for success in American business.[25] Although the titles varied from volume to volume, the advice was inevitably predictable. Good character and morality, perseverance and frugality, industry and thrift -- these and a peck of good luck would carry one from poverty to the promised land of economic and social success.

But this success literature never mentioned the fate of those who did not make it to the top. For there were thousands of youngsters who embodied all or some of these qualities and never got to the top or even near it. Not everyone could become a captain of industry; there was still a need for the great army of economic privates. How was this need going to be met? Once again, the schools were called upon to fill the need. Nor is this very surprising in a country that has long regarded education as a grand and optimistic American religion. In his Triumphant Democracy (1886), Carnegie argued that the "true panacea for all the ills of the body politic bubbles forth (in) education, education, education."[26] A critic of traditional linguistic study and a proponent of practical schooling, Carnegie was confident that "a new idea of education is now upon us."

A new education desperately was needed in America. The accomplishments of Horace Mann, Henry Barnard, and their generation were not sufficient for the new industrial era. The literary curriculum of the common schools did not hold many boys and girls in the later grades. Attendance laws varied widely and often they were not strictly enforced. High schools had not yet come of age and there was disagreement over their purpose and curriculum. Thousands of youngsters left school as soon as they could in order to find employment. In 1906, for example, it was found that about 25,000 children between fourteen and sixteen in Massachusetts were either at work or were idle. Nearly half of them had not gone beyond the seventh grade and only about one-sixth ever graduated from elementary school.[27] Regardless of the quantity of moral character, perseverance, and thrift they possessed, most of these children were engaged in "low-grade industries" with little or no prospect of future advancement. And why did they not stay in school longer? Because the schools, especially the higher grades, did not provide youngsters of fourteen and fifteen with "continued schooling of a practical character." If such a schooling could be offered in the several grades, the schools would become more attractive and thus hold more youngsters for more schooling.

In the 1870's, both Runkle and Woodward had addressed themselves to this problem. However excellent the "abstract intellectual discipline" of the schools, Woodward argued that an education was not complete without a knowledge of the material world and man's work. His remedy was to put "the whole boy in school" and educate him "for all spheres of usefulness." To this end, the schools should institute the study of manual training as part of their programs of general education. Such a system would intellectualize manual training, "elevate . . ., dignify . . ., (and) liberalize all the essential elements of society . . .," and render "it possible for every honorable calling to be the happy home of cultivation and refinement."[28] But Woodward's pleas for manual training did not go unchallenged. Many traditional schoolmen argued that only a common cultural education belonged in the public schools and not the teaching of trades or trade processes. One critic argued that there was "no information stored up in the plow, hoe handle, (or) steam engine" whereas "there is information stored up in books . . ."[29] Even the influential William Torrey Harris criticized manual training as presenting a limited knowledge of one's self and nature. Only an intellectual education, he declared, helped children to generalize, comprehend, relate, and idealize. "It is the difference between a piece of baked bread, which nourished for the day, and the seed-corn, which is the possibility of countless harvests."[30] Nevertheless, in spite of these strictures, the manual training movement spread rapidly in the last decades of the 19th century. Thousands of children began to study manual arts (not only tool work but homemaking and a variety of arts and crafts as well) in public and private manual training schools and in special classes in existing schools.

Despite this apparent success story for manual training, criticism began to mount from another corner. If traditional educators attacked manual training as being too narrowly practical, other voices began to attack it as being too narrowly theoretical. Especially after the turn of the 20th century, many educators and non-educators began to urge a practical training in the schools to prepare students for real jobs. Andrew Carnegie had sounded this call in the 1880's. In 1907, as towering a figure as President Theodore Roosevelt attacked the schools for putting too high a premium "upon mere literacy training" which forced children away from "the farm and the workshop." What was needed, Roosevelt declared, were schools "for mechanical industries in the city" and schools for the practical teaching of "agriculture in the country."[31] Andrew S. Draper, Commissioner of Education of New York State, rejected Woodward's premises for the teaching of manual training and declared that the movement emphasized work with the head to the detriment of work with the hands. In short, manual training schools were "much more like schools than shops, whereas they should be more like shops than schools."[32]

Woodward's followers fought back valiantly but to no avail. W. N. Hailmann, Superintendent of the Dayton, Ohio public schools, argued that manual training constituted "a fit culmination of a rational head-heart-and-hand training in the direction of the mechanic arts, engineering, and mining, and other worthy human pursuits that are unthinkable without manual skill." Manual training would prepare large numbers of citizens "in harmony with the best and highest culture of the day," he believed, "captains, lieutenants, and sergeants of industry, who see and feel the bearing of their work upon the public good, and realize their responsibility in this direction."[33] A "Conference on Manual Training," held in Boston in 1891, extolled the philosophy and methodology of manual training. The theme was consistently the same and the rhetoric eloquent in its behalf. Perhaps Felix Adler best represented the spirit of the conference when he declared: "manual training means the training of the intellect as well as of the hand; that its chief recommendation is that it offers a new instrumentality for training the mind . . ."[34]

But after the turn of the 20th century, in general, manual training exponents only succeeded in convincing each other. It was all well and good for Hailman to single out the captains of industry and other officers in this economic line of command. But what about the privates of industry who formed the majority of the working force and the overwhelming school population? How were these youngsters to be prepared for jobs they would occupy after their school experience? This was an important problem that the schools of the 20th century had to face honestly and squarely. This was the problem that Carnegie and Roosevelt were talking about; this was the problem that an increasing number of educators, businessmen, and laborers began to explore for possible solutions.

In 1906, the Massachusetts Commission on Industrial and Technical Education issued a report which studied the question in depth and issued a series of recommendations which served as a catalyst for more programs of vocational education.[35] Popularly referred to as the Douglas commission, after the Governor who convened it the year before, it stated that the schools were "too exclusively literary in their spirit, scope and methods." Although manual training was viewed as a useful beginning, the commission criticized the movement as being too narrowly conceived. "It has been urged as a cultural subject mainly useful as a stimulus to other forms of intellectual effort -- a sort of mustard relish, an appetizer -- to be conducted without reference to any industrial end. It has been severed from real life as completely as have the other school activities." Instead, the Commission recommended that elementary schools offer work "in the elements of productive industry, including agriculture and the mechanic and domestic arts." High schools were asked to make instruction in mathematics, the sciences, and drawing more applicable to industry "so that students may see that these subjects are not designed primarily and solely for academic purposes, but that they may be utilized for the purposes of practical life." All towns and cities were urged to establish "independent industrial schools for instruction in the principles of agriculture and the domestic and mechanic arts" or to provide new day or evening "elective industrial courses" in existing high schools.[36] In line with the commission's recommendation, the Massachusetts legislature quickly established a Commission on Industrial Education and appointed Paul Hanus, Professor of education at Harvard University, as its first chairman. Here, of course, was the implementation of a new dimension in the movement for vocational education. No longer was technical training to be viewed as an intellectual or cultural exercise but now rather was a vocational choice.

The Douglas report was distributed not only in Massachusetts but it also attracted a nation-wide audience. For an increasing number of people began to view the whole problem in national and even in international dimensions. As a result, in the same year that Douglas report was issued, the National Society for the Promotion of Industrial Education was formed "to unite the many forces making toward industrial education the country over."[37] Organized by two New York educators, the society would serve as a kind of clearing house and pace setter for the cause of vocational education in the United States. Within a few years, it enlisted the support both of organized industry (National Association of Manufacturers) and of organized labor

(American Federation of Labor) for public vocational schools. Once this collaboration -- as fragile as labor-management relations has been -- was obtained in 1910, educators by the score started to hitch their hopes to the rising star of vocational education. Whereas a decade or so before numerous papers had extolled manual training at the annual conventions of the National Educational Association, now the papers began to preach the gospel of vocational education with uniform regularity. This subject was deemed so important that the N. E. A. set up a special Committee on Vocational Education in 1913. Three years later, this committee published a massive tome on Vocational Secondary Education which dealt with the history, types, definitions, organization, financing, and problems of vocational education.[38] An international focus was given to this question by Commissioner Andrew Draper of New York who placed the importance of vocational education within the context of world politics. Germany's rising industrial capacity was related directly to the development of its excellent system of industrial schools. Other European countries were taking their cues from Germany and it was high time for the United States to awaken to the facts of industrial and political international life. Unless this country quickly organized a system of effective vocational schools, Draper concluded, "we may as well face the fact that Germany will in the end outrun America in industrial prepotency, and therefore in national productivity and power."[39] No mean internationalist in his views on foreign affairs, Theodore Roosevelt emphasized the defects of a purely literary education and urged schoolmen to direct education "more and more toward training boys and girls back to the farm and the shop."[40]

Roosevelt's sentiments indicate that he understood the vocational educational movement to include not only urban discontentment with the schools but also a strong element of agrarian dissatisfaction that was increasing in intensity.[41] Traditional schooling seemed as obsolete and irrelevant to the worker who labored in the factory as it was to the farmer who toiled the soil. Farmers' demands for a more practical education had been instrumental in the passage of the Morrill Land-Grant Act of 1862 which had established agricultural and mechanical colleges. But on the lower levels of education, there had been no basic change in the general curriculum patterns of preceding generations. Critics complained that rural schools dealt too much with books and too little with the practical realities of life. In order to halt the steady exodus of the young from the farm, many voices urged the school to accept the responsibility to teach rural youth the virtues of country living and the "spirit of agriculture." Not only influential farm journals but agricultural organizations as well stumped for a more practical education in the schools. An essential part of the program of the National Grange of the Patrons of Husbandry praised common school education but also demanded that it embrace practical subjects as well as the traditional academic studies. Both the Farmers' Alliances of the 1880's and the Populist movement of the 1890's vigorously pursued the call for a more practical education in rural schools. In 1892, a committee of the Association of American Agricultural Colleges and Experiment Stations pleaded for agricultural instruction in high schools as well as in rural common schools.[42]

At the beginning of the 20th century, therefore, the demand for vocational education in the schools included not only strong industrial demands but also spirited support from rural America. After the formation of the National Society for the Promotion of Industrial Education in 1906, many diverse groups such as farmers, businessmen, labor leaders, and educators converged for the good of vocational education. In the years following 1910, this organization launched a vast campaign for federal aid to support vocational education. Although twenty-nine states already had some type of vocational program in operation, it was thought the problem was of such national proportion that it demanded federal assistance. As early as 1906, the Pollard bill, which would have provided federal funds for the training of teachers of agriculture, manual training, domestic science, and related subjects, was introduced into the House of Representatives. Together with several others submitted in both houses of Congress in the years prior to 1914, this bill never gained the needed support for passage. In order to prod Congress to pass the necessary legislation, influential educators and non-educators persuaded the federal lawmakers to convene a Commission on National Aid to Vocational Education. Approved by President Woodrow Wilson in 1914, the commission consisted of four congressmen and five leaders in the field of vocational education, including Charles A. Prosser who was the executive secretary of the N.S.P.I.E.

The commission made a series of recommendations that were substantially incorporated into the Smith-Huges Act of 1917.[43] Under this act, federal funds were provided, on a matching basis with the individual states, for vocational education in agriculture, trades, home economics, and industry, and for teacher training in each of these fields. Those schools eligible for such funds had to be publicly controlled, designed to meet the needs of children over fourteen in order to fit them for useful employment, and be "less than college grade." To administer the allocation of federal funds, the act created a Federal Board for Vocation Education to work jointly and cooperatively with state boards for vocational education. A confirmatory rather than an innovative act, the Smith-Hughes Act made vocational education a bonafide part of American education and put it on a relatively stable financial basis. As Charles A. Bennett declares in his History of Manual and Industrial Education, 1870-1917, federal involvement in vocational education marked "a new era in manual and industrial education in the United States."[44]

A year after the passage of the Smith-Huges Act, the National Educational Association's Commission on the Reorganization of Secondary Education issued its famous Cardinal Principles of Secondary Education.[45] In preparation for several years and perhaps influenced by federal concern for vocational education, the report included "vocation" as one of the seven major objectives of secondary education. But rather than establish separate vocational schools, the report championed the development of comprehensive high schools in which the different aims of the school could be developed harmoniously. Vocational education was not ignored, for the report endorsed such vocational priorities as agricultural, business, clerical, industrial, fine-arts, and household education. Such recommendations obviously reflected a change of educational current from that of the previous and equally famous Report of the Committee of Ten (1893) which did not recognize the importance of including vocational courses in the curriculum.[46]

iv

Once the Federal Board for Vocational Education began operations, all the states quickly followed suit by establishing equivalent state boards for vocational education. Nearly 165,000 students were enrolled in vocational courses in 1918 and by the end of the 1920's the number had jumped to over 1,000,000 students.[47] In the late 1920's and early 1930's, Congress appropriated additional expenditures for vocational subjects. In 1936, the George Deen Act not only increased expenditures but for the first time underwrote the financing of distributive education as well.

But in 1936, the United States was also mired in its great depression. Millions of men were out of work and it was extremely difficult for young people to secure positions once they left school. Not only did the federal government continue its financial support of vocational education in the schools but it also sponsored "New Deal" legislation which provided non-school vocational programs. Established in 1933 to provide work relief for young men and to develop and conserve the natural resources of the country, the Civilian Conservation Corps engaged in varying degrees of on-the-job training. Specialized courses were offered in cooking, baking, radio operating, and training in the repair and maintenance of automobiles, tractors, and motors. In 1935, the National Youth Administration was organized to provide part-time, wage-earning work for students who needed financial assistance to remain in schools, and for young people who were out of school and unemployed. Those remaining in school performed a variety of jobs in schools and colleges while out-of-work youth engaged in a variety of jobs in construction, conservation, education, health, and office work. The Works Project Administration not only operated several cooperative programs with public vocational schools such as training people for defense industries, but it managed other programs directly under the administration of federal and state W. P. A. officials. With the approach of war in 1940, Congress passed greater appropriations to train defense production workers (war production workers after Pearl Harbor) with intensive training in specific jobs such as drill-press operators, lathe operators, riveters, and welders.[48] During the gloomy days of 1942, the National Society for the Study of Education devoted its forty-second yearbook to Vocational Education. In a chapter on "Legislative Commitments Affecting Vocational Education," L. H. Dennis predicted that post-war America would witness increased federal legislation with regard to vocational education and with correspondingly heavier responsibilities placed upon it. "Millions of people . . . will have to be retrained for peace-time occupations," declared Oakley Furney and C. Kenneth Beach in "Vocational Education for National Defense," while the "personnel of the armed forces will also need vocational training . . . ."[49] Dennis, Furney, and Beach were right on both counts. Right after the war, the George-Barden Act increased appropriations for the various areas of vocational education and even authorized the use of funds for guidance training in the field. And before returning servicemen set foot on American shores, Congress had already passed the "GI Bill of Rights" which provided substantial funds for the education of veterans.[50] Many men and women took advantage of this opportunity by attending numerous vocational training programs throughout the country.

Just as vocational education had emerged within the broader progressive movement in American education in the late 19th and early 20th centuries, so too did its fortunes fluctuate with the increasing criticism of public education in the late 1940's and 1950's.[51] In sharp reaction to the progressive education of the 1920's, 1930's, and early 1940's, many critics charged the schools with being intellectually mediocre and "coddling" too many youngsters. Even courses in vocational education did not prepare a sufficient number of adequately trained young people to meet the increasing manpower needs of the country. Moreover, the United States, now involved in a "cold war" struggle with Russia for world power and influence, desperately needed a better education to train more leaders, scientists, and technicians to compete with Russian achievements. Soviet scientific progress, most threateningly symbolized by the launching of Sputnik in 1957, loomed as a serious Russian challenge to American power and prestige. This country could not afford to lose the battle and strident voices called for the intellectual improvement of the schools. Responsive to the need for educational action if the United States were to retain her national and international leadership, Congress passed the National Defense Education Act in 1958 just one year after Sputnik.[52] In addition to funds that were provided for programs in science, mathematics, and modern languages, the set appropriated $15,000,000 annually to the states to assist in the training of skilled technicians in fields necessary for national defense.

In the years immediately following the passage of the N. D. E. A., James B. Conant wrote a series of books examining the different levels and problems of American education. A former President of Harvard University, Conant argued that the existing educational structure was basically sound even though it needed some basic and immediate reforms. In The American High School (1959) and Slums and Suburbs (1961), he strongly defended the need for vocational educational programs in American schools. He felt that traditional vocational programs were worthy of study and advocated that they be part of the program of the comprehensive high schools rather than exist as separate vocational schools. Conant believed that students enrolled in vocational programs should also receive a solid general education and that administrators should make every effort to prevent their "isolation from the other students." Finally, he urged that students must see the relevance of vocational courses to their future careers and that vocational programs be directly related to the employment opportunities in the different communities.[53]

Although Conant gave generous endorsement to vocational education in his books, his statistics indicated that most high school students did not receive any kind of vocational training. Thus, in 1953-1954, only 39.5% of all male students in Massachusetts were in vocational programs while only 7.0% of the girls participated in any comparable program.[54] Nine years later, the figures were not any more encouraging. As of 1962, over 11,000,000 of the more than 13,000,000 high school students participated in no vocational classes; of the former number, it was estimated that approximately half needed such instruction in an age when greater and more sophisticated skills than ever before were needed for success in the labor market. National drop-out figures for 1961 indicated that two-thirds of the youngsters between sixteen and twenty-one were unemployed.[55] Many educators became increasingly concerned with such alarming figures, and in 1962 the federal government took cognizance of the situation by passing the Manpower Development and Training Act which provided funds for the training and re-training of unemployed youngsters and adults.[56] Nevertheless, two years later, it was estimated that approximately 1,800,000 workers were losing their jobs to machines every year, and that 1,000,000 people under the age of twenty-five possessed no vocational skills and thus were unemployed.[57]

In view of the technological advances and the strident social problems in contemporary American society, vocational education itself came in for reassessment. Accordingly, President John F. Kennedy appointed a Panel of Consultants on Vocational Education "to review the past achievements and to modernize and redirect the program in terms of the extraordinary developments in technology and in terms of a variety of social and economic needs."[58] As a result of the panel's recommendations, Congress passed the Vocational Education Act of 1963.[59] As much a milestone in the history of vocational education as was the Smith-Hughes Act nearly five decades earlier, it not only strengthened existing programs but extended vocational concern in areas not previously developed. In the words of Mayor D. Mobley, executive secretary of the American Vocational Association, and Melvin L. Barlow, director of the Division of Vocational Education at the University of California at Los Angeles, the act provided "instruction so that persons of all ages in all communities will have ready access to vocational training which is of high quality, realistic in relation to employment, and suited to the needs, interests, and ability of the persons concerned. Such persons were identified: (a) those in high school, (b) those who have completed or discontinued formal education and are preparing to enter the labor market, (c) those who have already entered the labor market and who need to upgrade their skills or learn new ones, and (d) those with educational handicaps."[60] Never before in its history had vocational education been charged with such a broad and expansive responsibility in American education.

Most vocational educators viewed this act as the second "Magna Carta" in the history of vocational education. Funds would now be available to develop pilot programs and demonstration projects, declared one author, while another felt that the statute would enable new programs to provide broader employment opportunities for more Americans.[61] Such a law reminded society, in the view of a third author, of its obligation to help the nine out of ten who did not hold a baccalaureate degree nor have job preparation as the end of their formal education.[62]

Another writer believed that the act was geared to those from low-income families who suffered from poor levels of health, education, and under-employment. Furthermore, it was designed to help minority groups, those with non-institutional mental problems, the culturally disadvantaged, and the politically and economically powerless.[63] Harold Howe II. Commissioner of Education, stated that better and more extended vocational educational programs would give greater self-respect to those students participating in superior programs. "By making our young people believe in themselves as individuals," he declared, "improved vocational-education programs will make them better citizens, better parents, and better members of the community in which they live."[64] In a generally optimistic vein, one vocational educator prophesied that the "epitaph to vocational education as we have known it may have been written with the passage of the Vocational Education Act of 1963." Because this act made programs less restrictive and more flexible, vocational educators on the one hand could "no longer hide behind . . . the so-called restrictive federal limitation" while on the other hand, general educators could no longer "rationalize . . . (their) lack of indecision to move precisely into the field of vocational education."[65]

Vocational education is still beset with many problems. Yet, this is not alarming in itself for to the problems will come the challenge to seek new solutions. Legislation provides some results, but it must be coupled with new ideas and new vision before the field fully responds to the needs of society. Increasingly aware of the importance of vocational education for American society, "what will the states do differently under these new provisions which will assure the preparation of youth to meet their challenge in the work-a-day world? Will the leadership provide a sounder secondary-school vocational opportunity for youth? Will there be more state or local funding?"[66] These are but a few of the questions that must be dealt with effectively. What are the chances for continued progress in vocational education? In the words of one vocational educator, "Only time will tell."[67]

FOOTNOTES

[1] Charles A. Bennett, History of Manual and Industrial Education, 1870 to 1917 (Peoria, Illinois: The Manual Arts Press, 1937), pp. 16-17, 48-50. At this point, I should like to acknowledge a debt of gratitude to Robert Lavenburg for his able help in the research for this paper.

[2] Ibid., p. 320.

[3] Ibid., pp. 32-1322, 340-346. Cf. Charles H. Ham, Manual Training, The Solution of Social and Industrial Problems (New York: Harper and Brothers, 1886) and John D. Runkle, Forty-first Annual Report of the Board of Education, State of Massachusetts, 1876-1877.

[4] Calvin M. Woodward, Manual Education (St. Louis: G. I. Jones and Company, 1878), p. 20.

[5] Ibid., pp. 18, 21.

[6] John Dewey, The School and Society in Martin S. Dworkin (ed.) Dewey on Education: Selections (New York: Teachers College, Columbia University, 1959), p. 35.

[7] For a devastating, muckraking account of American education, see Joseph M. Rice's articles in The Forum Magazine (1892-1893). In The Transformation of the School: Progressivism in American Education, 1876-1957 (New York: Alfred A. Knopf, Inc., 1961), pp. 3-6, Lawrence A. Cremin presents a penetrating analysis of the Rice articles.

[8] Dewey, op. cit., p. 36.

[9] The two famous English laws relating to apprenticeship were the Statute of Artificers (1562) and the Poor Law (1601). Cf. Jonathan F. Scott, Historical Essays on Apprenticeship and Vocational Education (Ann Arbor, Michigan: Ann Arbor Press, 1914) and Arthur B. Mays, The Problem of Industrial Education (New York: The Century Co., 1927), chs. III and IV.

[10] For the texts and analysis of these laws in detail, see Robert F. Seybolt, Apprenticeship and Apprenticeship Education in Colonial New England and New York (New York: Columbia University Press, 1917).

[11] Ibid.

[12] For a masterful analysis of the Puritan colonial mind and the influence of Augustinian thought upon it, see Perry Miller, The New England Mind: The Seventeenth Century (Boston: Beacon Press, 1961 and The New England Mind: From Colony to Province (Boston: Beacon Press, 1961).

[13] Paul H. Douglas, American Apprenticeship and Industrial Education (New York: Columbia University Press, 1921), p. 47.

[14] Ibid., ch. II. Cf. Carl Bridenbaught, Cities in the Wilderness: The First Century of Urban Life in America, 1625-1742 (New York: Ronald Press Company, 1938) and Bernard Bailyn, Education in the Forming of American Society (New York: Vintage Books, 1960).

[15] Quoted in Douglas T. Miller, Jacksonian Aristocracy: Class and Democracy in New York, 1830-1860 (New York: Oxford University Press, 1967), p. 107.

[16] Working Man's Advocate, March 30, 1844, quoted in ibid., p. 131.

[17] New York Evening Journal, February 18, 1830, quoted in ibid., p. 34.

[18] Ibid., pp. 34-45.

[19] Ibid., p. 37.

[20] Free Enquirer, November 7, 1829: Working Man's Advocate, April 24, 1830. For a biography of Owen, see Richard W. Leopold, Robert Dale Owen, A Biography (Cambridge, Mass.: Harvard University Press, 1940). Cf. Lawrence A. Cremin, The American Common School: An Historic Conception (New York: Teachers College, Columbia University, 1951), pp. 33-44.

[21] Charles A. Bennett, History of Manual and Industrial Education up to 1870 (Peoria, Illinois: The Manual Arts Press, 1926), pp. 317-325.

[22] For a history of the lyceum movement in the United States, see Carl Bode, The American Lyceum (New York: Oxford University Press, 1956).

[23] Jonathan B. Turner, Industrial Universities for the People. Published in Compliance with Resolutions of the Chicago and Springfield Conventions, and Under the Industrial League of Illinois (Jacksonville, Illinois: Morgan Journal Book and Job Office, 1853), p. 22.

[24] Quoted in Eric F. Goldman, Rendezvous With Destiny: A History of Modern American Reform, revised and abridged (New York: Vintage Books, 1956), p. 29.

[25] Henry Perkinson, unpublished manuscript tentatively titled The Imperfect Panacea. I wish to thank Henry Perkinson for allowing me to read his manuscript and glean several of his insights.

[26] Quoted in ibid. Cf. Andrew Carnegie, The Empire of Business (New York: 1902), pp. 79-81.

[27] Report of the Commission on Industrial and Technical Education, April, 1906 (Boston: Wright and Potter Printing Co., 1906), pp. 30-34.

[28] Quoted in Cremin, Transformation of the School, op. cit., pp. 28-29. In general, I am following the chronology of Bennett and Cremin during the remaining part of section iii of this paper.

[29] Quoted in Bennett, Manual and Industrial Education, 1870-1917, op. cit., p. 361; Cremin, Transformation of the School, op. cit., p. 30.

[30] Quoted in Cremin, Transformation of the School, op. cit., p. 31.

[31] Theodore Roosevelt, "Annual Message, December 3, 1907," in The Abridgements (1907) vol. 1, pp. 30-31.

[32] Andrew S. Draper, "Our children, Our Schools, and Our Industries," Albany, New York: New York State Education Department, 1908), p. 9.

[33] W. N. Hailman, Educational Aspects of Manual Training (New York & Chicago: E. L. Kellogg & Co., 1899), pp. 18-19.

[34] Felix Adler, "The Educational Value of Manual Training in the Public Schools," A Conference on Manual Training, Boston, April 8-11 (Boston: New England Conference Educational Workers, 1891), p. 46.

[35] Report of the Commission on Industrial and Technical Education, April, 1906 (Boston: Wright & Potter Printing Co., 1906).

[36] Ibid., pp. 2-24.

[37] Bulletins of the National Society for the Promotion of Industrial Education, Bulletin No. 1 (1907), p. 13; Cremin, Transformation of the School, op. cit., p. 39; Bennett, Manual and Industrial Education, 1870-1917, op. cit., pp. 517-518.

[38] Vocational Secondary Education, Bulletin, 1916, No. 21 (Washington, D. C.: Government Printing Office, 1916.

[39] Draper, op. cit., p. 32.

[40] Theodore Roosevelt, Address, Educator-Journal (April, 1908), 382.

[41] Although Roosevelt seemed to see the relationship between urban and rural elements in the demand for vocational education, many historians, including Bennett, have emphasized the urban element in the movement. Thus, one of the most valuable parts of Cremin's discussion of vocational education during the post-Civil War period is that which definitely relates the urban and rural demand for vocational education. Cf. Rush Welter, Popular Education and Democratic Thought in America (New York: Columbia University Press, 1962), Part Three, ch. X.

[42] Cremin, Transformation of the School, op. cit., pp. 41-50; Welter, ibid., pp. 160-176.

[43] Bennett, Manual and Industrial Education, 1870-1917, op. cit., pp. 542-550; Cremin, Transformation of the School, op. cit., pp. 52-57. Cf. Federal and State-Aided Vocational Education (New York: National Society for the Promotion of Industrial Education, 1917).

[44] Bennett, Manual and Industrial Education, 1870-1917, op. cit., p. 550.

[45] Cardinal Principles of Secondary Education (United States Bureau of Education, Bulletin No. 35, 1918).

[46] Report of the Committee of Ten on Secondary School Studies (New York: American Book Co., 1894). For a good discussion of this report as well as the Cardinal Principles of Secondary Education, see Edward A. Krug, The Shaping of the American High School (New York: Harper & Row, 1964) and Lawrence A. Cremin, "The Revolution in American Secondary Education, 1893-1918." Teachers College Record, 56 (March, 1955), 295-308.

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Theodore Brameld*

REACTION

"The Development of Vocational Education in America: An Historical Overview by Dr. Vincent Lannie is an admirable example of the relevance of history in general, and of vocational education history in particular. It demonstrates how we cannot hope to move forward toward prognosis of the problems confronting such a conference as this unless and until we are provided with the kind of diagnosis which, no less in education than in medicine, the history of the patient requires.

Let me select a few of the highlights of this paper as they strike one learner who happens to be particularly concerned with the prognostic dimension.

To begin with, it is helpful for us to realize that rich historic influence upon the development of vocational education in America derived from other parts of the world. Thus it was entirely news to me to learn that the Imperial Technical School of Moscow provided something of preliminary model a full century ago. Likewise, the impact of Robert Dale Owen by way of English and Swiss pioneering was impressive. Today, it would seem highly desirable to appreciate more than we often do because of our ethnocentric if not often quite condescending American posture that we can still benefit enormously by frontier developments in other cultures which are, in fact, sometimes far ahead of our own in educational as well as other kinds of practice. In two prolonged research studies that I have conducted abroad -- one in Puerto Rico, the other in Japan -- I have found rich demonstrations of this fact as they apply in other features of education than the vocational. The question I would ask is whether we might not equally benefit from combined vocational-general designs and programs that have burgeoned in the Soviet Union, Yugoslavia, and other countries according to what is now frequently termed polytechnical education.

A second reaction that deserves comment is Professor Lannie's proper concern for the cultural evolution of America during particularly the past century -- the change of family patterns with their occupational shifts, the decline of ruralism, and above all the revolutionary changes in large-scale industrialism with such accompaniments as urbanism. It is, to be sure, trite merely to comment here that educational changes are always the counterpart of economic, political, social, and other aspects of cultural change. Not equally trite is the profound and complex network of relationships, often hidden and even unconscious, that pervades these connections. To understand the views of, say an Andrew Carnegie or a Theodore Roosevelt in their enthusiasm for vocational training without understanding their stake in an economic system that benefits enormously from a large reservoir of trained workers is to fail to appreciate how vocational education also became and still remains an important ally of that system -- a system which, whatever we may think of its vast contributions, proves also to be one that is heavily burdened with a record of severe exploitation, autocratic domination, political corruption, imperialist expansion, and -- last but by no means least -- emotional and intellectual alienation. Granting that such characteristics as these that lie in the background of vocational education have been modified in various degrees, it is not, I believe, unwarranted to contend that they still remain powerful characteristics, if often still concealed, in our own day.

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A third reaction that the paper challenges is its frequent reference to the conflict between general, academic education and vocational education. This conflict, as the author knows better than I, reaches back into history at least as far as Plato. Yet is it surely not evident that no very significant or far-reaching resolution has yet been found in America on any broad scale? James B. Conant's comprehensive high school, although one may concede that it is one of his very few impressive ideas, amounts to little more than a patchwork -- a curriculum that glues together many pieces of much the same subjects and skills that have long prevailed in the typical high school, yet that never confronts the much more fundamental conception of a well integrated curriculum. This conception, maintained with particular persuasiveness by two great educational leaders mentioned in the paper -- John Dewey and Felix Adler -- denies any bifurcation of vocational and academic learning. It regards each as fruitful to the other. The notion of "work experience," for example, is not seen as a kind of appendage to "intellectual experience" but as a repudiation of the whole long tradition of their separation. The pioneering of Elsie Clapp, the innovations of Antioch College, and other cases have demonstrated that an anti-dualistic, genuinely unified, and organismic conception of elementary, secondary, and even college education is psychologically and socially, as well as philosophically, feasible. Yet, in many respects, it appears that recent American education has, if anything, drifted away from rather than moved aggressively toward its realization -- a drift which must be accounted for again, not so much within education itself, as by the cultural climate of our time noted by events in the paper.

These comments lead me, in conclusion, to respond to Professor Lannie's concluding paragraph where he touches upon the need for "new ideas and new vision." Permit me to mention three illustrations of this need, all of them sparked by his own overview.

Returning to the unified conception of the curriculum that we have thus far failed to realize in America, the "new vision" already well overdue is not of a patchwork comprehensive high school but of a genuine community school -- a school that amalgamates the curriculum in terms of the vital and pressing problems of human life itself, beginning with the family as the most nuclear community of all, moving outward into the neighborhood, and gradually, with maturation, embracing the ever-widening circumferences of state, region, nation, and finally the community of the world as a whole. Such a school includes vocational experience in the form of work involvement, but always in relation to expert guidance by teachers. Every phase of the technological, agricultural, and other dimensions of the widening community is taught and learned, but constantly in dynamic interaction with history, science, language, art, and every other important ingredient essential to the process of growing up and reaching maturity. The classroom itself therefore changes its character to embrace the environment outside formal walls. Parents and other citizens as well as students become involved in every aspect of rule-making, curriculum planning and implementation; indeed, they themselves often become part of the community school on the thoroughly established assumption that learning is a lifelong process. At the same time, the radical alterations in American life induced by reductions of working time and increases of leisure time become both a severe problem and an exciting opportunity. Drop-outs diminish because children and young adults discover that they are learning about a time and a world that directly concern them.

My next illustration follows. Professor Lannie has not mentioned that one of the more interesting developments in twentieth-century education as it relates to the vocational is known as worker's education. This is the movement sponsored primarily by organized labor. In recent years, due at least in part to the narrow and unimaginative policy of the CIO-AFL, workers' education has become much less a dynamic force than it was two and three decades ago. Nevertheless, its role remains as essential as it ever was, perhaps more so, for the worker involved in this movement learns about himself and his fellows in ways that he rarely if ever learned in strictly vocational education, or for that matter in the academic curriculum. Workers' education, in short, was and still remains in some degree an effort to enlighten the vast population of working people, blue-collared or white-collared, about the economic and political environment, about the meaning of industrial democracy, and how they might confront the serious deficiencies of an economic system designed too often to utilize vocational training in behalf of other people's interests and power than their own. Today, there is some prospect that this movement will once more move ahead. It is my own hope that it will become a continuous adjunct of the community school as a whole.

My final illustration of "new ideas and new vision" recalls Professor Lannie's reference to the emergence of federal support. I am grateful to him for reminding us of the Smith-Hughes Act and of those that have followed. For we are thereby also reminded that, thanks chiefly to the leaders of vocational and agricultural education, federal aid has a much longer and more successful history than many of its opponents like to remind us of. Today, federal aid has also belatedly arrived as an essential aspect of total public education regarded as a national responsibility. Where confusions still prevail most conspicuously is not in that responsibility so much as in the question of how far federal control is to be a cooperating policy of federal aid. At present, the National Education Association has itself regressed in its attitudes, apparently preferring to support more of the tradition of local and state control. The history of Smith-Hughes and even the recent policies governing the G. I. Bill of Rights and the National Defense Education Act demonstrate, I think, that the NEA is wrong again, and that the old bugaboo of federal control should at last be liquidated. The central question is not, of course, whether we are to have control along with aid, because we always have. Rather, the question is how federal control is to be democratically carried out by guaranteeing workable policies of decentralized administration commensurate with centralized authority. I gladly concede that this issue is difficult, for its roots run deep into political philosophy. It vitalizes precisely the kind of issue that citizens themselves should be confronting with increasing sophistication in the curriculum of every level. It therefore embraces workers' education. And it is an issue that illustrates how the community school fuses academic and vocational education as every-day partners.

PSYCHOLOGY

James W. Altman*

A BEHAVIORAL VIEW OF VOCATIONAL-TECHNICAL EDUCATION

INTRODUCTION

Vocational-technical education has a rich history, having been surveyed and studied by many (Altman & Morrison, 1966; Barlow, 1965; Borow, 1964; Eninger, 1965; Quirk & Sheehan, 1967; United States Department of Health, Education, and Welfare, 1957; Venn, 1964). I do not propose, however, to look at vocational-technical education in historic perspective or even from a review of its current status. Rather, I shall simply assume that change will be occurring at an accelerating rate and that attention to the specific processes by which we endeavor to guide this change is worthwhile. These assumptions are based on two facts:

1. The total body of scientifically based knowledge is changing at a rate which invites obsolescence during the very act of being whisked into the school. Price (1963, pp. 2-3) has defined the immediacy of scientific knowledge in graphic terms:

> **". . . any young scientist, starting now and looking back at the end of his career upon a normal life span, will find that 80 to 90 percent of all scientific work achieved by the end of the period will have taken place before his eyes, and that only 10 to 20 percent will antedate his experience."**

2. The concentration of resources involved in curriculum revisions and their impact on education are assuming proportions worthy of serious consideration (Sizer, 1965). Gagné (1966) recently stated, "The central focus for change in educational practice during the past decade has been the curriculum." I can see no reason why this focus is likely to change in the near future. Consequently, I would like to approach the issue of change in vocational-technical education largely from the perspective of how one might go about developing a new educational program, with emphasis on instructional content.

Like it or not, deciding what to teach is no longer casual or obvious. It is becoming an increasingly expensive and complex process, albeit one which is still largely implicit and lacking a generally accepted technological base. The purpose of this paper is to explicate some of the imperatives for such a technology of educational development. Precisely because they have received the least attention from behavioral scientists and educational researchers, and because they are most lacking in technical base, I shall concentrate on the very early stages of development. My coverage of the later stages will be relatively traditional, sketchy, and intended primarily to insure that

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we have a comprehensive developmental framework -- not to provide substantive detail.

Following the suggestion of a developmental framework, I will attempt to derive some of its implications for the potential long-range contributions vocational-technical education can make to individuals at the secondary and post-secondary levels. Finally, I shall try to identify some of the directions which might be implied by such a developmental framework.

DEVELOPMENTAL METHODOLOGY

Perhaps at the outset of discussing developmental methodology we should try to clarify the specificity-generality or training versus education issue. Glaser and Glanzer (1958) have defined this issue as follows:

> "'Training' is usually defined as the teaching of specific skills; 'education,' on the other hand, usually refers to a broader type of teaching. The objectives of education are the providing of a basis for learning of specific skills at some later date either through experience or training. An issue frequently met concerns whether it is more worthwhile to train individuals for a high proficiency level in a particular phase of a job or more worthwhile to provide more general training within the time available. Specific training gets people on the job faster and usually at a relatively high level of competence. More general training (assuming equal time periods for both kinds of training) usually means that men may be more adaptable to fluctuations in job procedure and new equipment, but require an additional period of specific on-the-job training. Each kind of training has its place and often a compromise between the objectives of specificity and breadth must be made and appropriate training for specific skills or training of behaviors which are more generalizable must be implemented (p. 9)."

Accepting the position of Glaser and Glanzer, it seems clear that we must seek a methodology which will cover the full spectrum of education-training. There seems to be no sharp line of demarcation. However, a methodology which is comprehensive enough for such a broad spectrum will inherently be overly elaborate for many specific developmental problems -- especially those involving only highly specific job training. For example, Butler's (1967) approach to design of systems for instruction of one or a few closely related jobs appropriately attenuates all of the steps in our approach we would suggest are presented in schematic overview as Figure 1.

IDENTIFY MILIEU FORCES

An honest effort to explicate the principal motives out of which a developmental effort grows, which will influence the course of development, and which will affect the success of implementation, can help to clarify the complex of communication required throughout the developmental process. It is neither necessary nor feasible that a design team do an in-depth analysis of the innermost motives of all relevant parties. Nevertheless, a great deal of useful clarity can be achieved by being specific about the principal forces that demand and those that run counter to the developmental effort.

Woodring (1964) has stated that most recent reforms in education have been due not to new psychological discoveries but to social and political pressures and to widespread discontent with our educational system. Shaw (1966) has more recently reaffirmed this position and added economic, demographic, advances in technology, pressure group, and "knowledge explosion" factors as taking precedence over psychological findings or advances in curriculum theory. However, I would not be so inclined to discount the fad value of innovations such as team teaching, ungraded classes, tracking, teaching machines, programmed instruction, individualized instruction computer-based instruction and guidance, flexible scheduling (Bush & Allen, 1964), "the systems approach," and "program planning and review techniques" as a source of pressure for educational change.

Regardless of the sources, it seems to me that being as explicit and honest as possible about the basal motivation out of which a developmental effort grows can be most cathartic for the entire complex of communication required throughout the developmental process. Indeed, I would almost be willing to enter the following as serious propositions:

1. The degree of self-delusion and misapprehension is a monotonic increasing function of the degree of grandiloquence with which purpose is stated or implied.
2. The difficulty of achieving coherence of developmental action is a monotonic increasing function of the degree of self-delusion and misapprehension with which purposes of the effort are understood.
3. The merit of an educational developmental effort is a monotonic decreasing function of self-delusion and misapprehension rampant among a developmental team.

IDENTIFY RESOURCES,[1] CONSTRAINTS,[1] AND CONTEXTS

No educational development effort has unlimited resources of manpower, money, materials, facilities, or time; each has additional political, technological, instructional staff, policy, and administrative limits. No educational development has operational meaning outside of the organizational and demographic contexts in which it will be applied. Thus, these factors should be identified and defined early in the developmental process -- otherwise the developmental program may be incompatible with the realities that influence its success or failure.

I do not mean to imply that limits, once identified, are forever fixed. Tradeoffs can sometimes be made. Ongoing development may suggest that resources once thought adequate will no longer suffice, that constraints once thought acceptable are intolerable, or contexts once thought ideal are only second best. It seems important, though, that flexibility not be confused with either indifference to reality or with vagueness in defining one's situation.

DELIMIT THE REGION OF CONCERN

I have chosen to approach the issue of how one might go about deciding what to teach from the viewpoint of defining educational objectives. Let us agree to mean by objective a statement or understanding of what it is we want to achieve with the educational process. Although there are many legitimate goals for the educational establishment (Gardner, 1960), the quintessence of my concern will be with behavioral objectives. By a behavioral objective I mean any statement or understanding of what it is we want the learner to be able to do at the end of an educational experience.

By choosing behavioral objectives as the principal vehicle for defining what it is we want to be taught, I do not mean to imply that other approaches to selection of educational content are not valid. It does seem to me, however, that behavioral objectives for education do have a peculiar relevance and facility for supporting the choice of what is to be taught.

I approach the derivation of objectives with considerable humility, both because it is an area in which a number of persons whose work I greatly admire have labored many years and because it is inherently a difficult one. Nevertheless, it is of such crucial importance to the educational development enterprise that I feel we must be alert to any reasonable prospects for advancing the state-of-the-art and implementing such technique improvements in developmental programs. I cannot

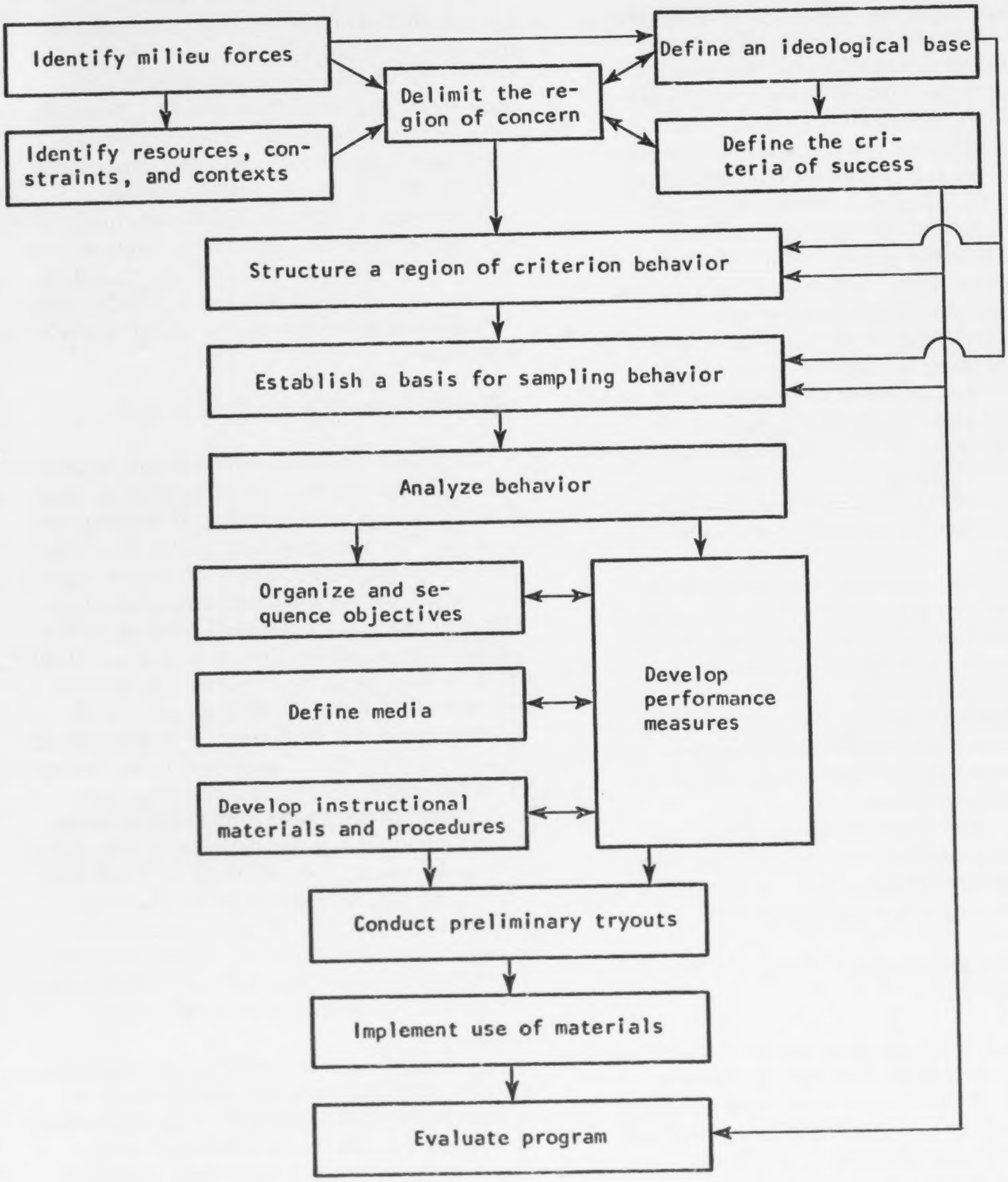
Identify milieu forces
Identify resources, constraints, and contexts
Delimit the region of concern
Define an ideological base
Define the criteria of success
Structure a region of criterion behavior
Establish a basis for sampling behavior
Analyze behavior
Organize and sequence objectives
Define media
Develop instructional materials and procedures
Develop performance measures
Conduct preliminary tryouts
Implement use of materials
Evaluate program

Figure 1. A Schematic Overview of Steps in Educational Program Development

help but feel there are reasonable prospects for improvements in methods of deriving educational objectives which are sufficiently close to warrant consideration.

I am led to this conclusion by more than simple faith. Our own efforts to expand the definition of systematic derivation of objectives in the development of the Quincy, Massachusetts vocational-technical curriculum (American Institute for Research, 1965a, 1965b), in deriving vocational measures for the national assessment program (Rosenfeld, Kowal, & Seiler, 1965), in studies for the Ford Foundation of ways in which vocational capabilities might be described (Altman, 1966d), and in defining directions for the integration of vocational education to the American Vocational Association (Altman, 1965) all suggest the possibility of greater freedom from tradition and more opportunity for rigorous methodology than do approaches which have been more generally enunciated.

Perhaps we can agree without detailed argument to the following four general propositions.

1. Processes of both analysis and synthesis can serve derivation of objectives. Analysis or deduction can serve to break highly abstract general domains or areas of activity into more specific and useful pieces. Synthesis or induction, on the other hand, can help to clarify ways in which sample behaviors might represent the plethora of possible behaviors implied by any broad area of human activity.

2. There is a role for both content specialists and behavior analysts in the derivation of educational objectives. This is not to say that these roles cannot be more fully and differently defined than in the past. Neither is it to imply prior prejudice as to the domain of experience which leads to the greatest content expertise. Certainly it admits of the possibility that content relevance may come from outside the educational establishment.

3. A hierarchy or taxonomy of behavioral processes is one crucial aspect of any serious effort to establish a significant educational enterprise. Bloom (1956) and Krathwohl, Bloom, and Masia (1964) have provided the classic demonstration that different behavioral levels have their own unique evaluation and measurement aspects. Gagné (1965a) has detailed the different conditions required for effective learning of different levels of behavior. Elsewhere, I have detailed the types of errors (Altman, 1966a) and critical variables in generalization of learning (Altman, 1966b) associated with different levels of behavior. All of this suggests that attention to the complexity level of behaviors implied by objectives can have important educational implications.

4. No practical educational experience can be devoid of content or context. All behavior has finite stimulus and response boundaries. Further, it is practicable to think of simultaneous analysis of educational objectives in terms of content and behavioral process levels (Altman, 1966c).

Granting agreement on the above four points, does this necessarily lead us to a conclusion that we are ready to go beyond techniques implied by behavior analysts such as Tyler (1934), Gagné (1965b), and Mager (1962)? I think not. The above four points and the demand for being specific about behavior implied by objectives do not lead us beyond the current state-of-the-art. What then is the critically needed factor to insure more cogent educational objectives than those to which we have been led in the past? I would suggest that it is simply this: explicit derivation of objectives from a behavioral domain other than existing courses or disciplines.

Where, other than existing disciplines and courses, can one find an appropriate domain of behaviors? Obviously, in the arena of behaviors associated with being an effective student, of concurrent behaviors outside the role of student, of education and training performance after leaving the educational experience being developed, and of other post-graduation behavior. It's a complex arena. No wonder we tend to shrink from confronting it and repeatedly take refuge in the tidier arena of existing disciplines. Even the most tangible part of the broader arena, vocations, includes thousands of jobs -- and it is only recently that we have learned to make relatively precise training derivations from the more prescribed jobs.

I would contend that we will make significant future progress only when we quit hoping that reshuffling existing disciplines and salting them with the easy captures of obvious new trends in the external (outside school) world will somehow get us out of the curriculum box we are in. This, I fear, is all too analogous to hoping that faster rotation of an eccentric wheel will get us to the moon.

If we are to make a frontal attack on that awesome arena for which we are already purporting to educate, how might we grapple with it in such a way that there will be at least a fighting chance of bending it to our will? It seems to me that the most critical point is to select the region of referent behavior where we expect the educational experiences under development to pay off. There are at least three major aspects of any region of interest which require delineation. They are:

1. The population and subpopulations of concern. Delineation includes assumed input characteristics, bases for specific exclusion from the region of concern, durations of exposure to the educational process under development, known implications of different subgroups for the educational system.

2. The time frame. This includes a definition of the period of time over which the criterion behaviors are expected to occur. In particular, it is aimed at delineating the nominal period of greatest relevance for the description of criterion behaviors (e.g., is it intended to be a description of what graduates now do or a description of what graduates are forecast to be doing ten years in the future?) and probable trends around the period of maximum relevance for the description.

3. The boundaries of behavior to be considered within and outside the region of concern. For example, is behavior as a resident outside the United States to be included or excluded from explicit consideration? Are we concerned only with behavior on the job or are we also concerned with behavior in the family, in the community?

DEFINE AN IDEOLOGICAL BASE

A great deal of confusion and unproductive activity can be avoided if a clear commitment to guiding policy can be made early in the development process. Essentially, this is a matter of establishing a basis for deciding priorities. Without such a basis, it is unlikely that choices among the infinitude of alternatives faced in educational development will follow any coherent pattern.

I have found no easy, or even satisfactory, way to classify educational ideologies (a unified and consistent set of values concerning the objectives of education). Indeed, recent writers such as Alberty and Alberty (1962, Ch. 2) decline to attempt any real integration even though they document a number of efforts by others to do so. My own suspicion is that educational ideology is inherently multidimensional but classification schemes have been able to reflect only a small number of variables. In any event, it seems clear that educational ideologies have varied in their commitment along at least the following dimensions:

1. Time orientation. Some philosophers have emphasized that only systems of knowledge that have stood the test of time are worthy of being taught. Others have contended that education has value only insofar as it prepares students for their future.

2. Individualism. Some philosophers have emphasized development of individual potential as the chief goal of education. Others have stressed the need for education to serve the established values of the society. Of course, many have endeavored to achieve rapprochement. John Gardner (1961, 1963)

has made notable efforts along these lines.

3. Individualization. It is easy to confuse the issue of individual orientation versus social orientation (individualism) with the issue of valuing diversity versus conformity (individualization). Yet, they are different. It is possible to value individual development above all else in education, but to have a single model of idealized man toward which the development of each individual is to be bent. Conversely, it is possible to have a pluralistic model for society which demands diversity of education to meet its needs.

4. Achievement orientation. Some would contend that educational experiences can be justified only on the basis of definite and observable changes on the part of the learner. Others would contend that there are experiences in youth having merit in their own right, not dependent upon external criteria of learning.

5. Political commitment. In American education, democratic processes in the school and preparation for a role in democratic society have been highly valued by philosophers (although authoritarian teaching of democratic principles has perhaps characterized most practice). There are others who feel that democracy represents too restricted a framework to serve as the sole focus of education. It is interesting to note, perhaps, that most of the debate has not centered around this issue but rather around the identification of appropriate democratic values and the methods by which they can best be taught.

6. Cultural spread. Regardless of one's ultimate commitment to democratic values, it is possible to debate the value of teaching from a narrow versus a broad base of extant or extinct cultures. Of course, this issue is not limited to national definitions, as illustrated by the current debate concerning the teaching of middle-class values in deprived urban areas.

7. Morality. There is in American education a great deal of ambiguity concerning the appropriateness of the institution accepting and transmitting guidelines for individual and social action. Whether such guidelines should be taught at all, the level of detail appropriate -- from the cardinal principles to folkways, and the extent of absolutism versus situational relativism are all moot.

8. Utility. American society has frequently been criticized for its emphasis on economic values. American education, particularly vocational education, has often shared this preoccupation. Yet, it is neither irrelevant nor impertinent to suggest that aesthetic values may have a useful role in determining what should be taught in vocational curricula (Macdonald, 1966).

9. Generalization. The nature and extent of learning transferred from one situation to another is largely an empirical-psychological question, even though most of the definitive work remains yet to be done (Altman, 1966b; Dallett, 1965; Houston, 1964; Martin, 1965; Wimer, 1964). Even if all of the empirical questions concerning the characteristics of transfer were answered, there would still remain important questions concerning the extent to which direct and specific transfer from a learning situation to an arena of application should be sought.

10. Commitment. Educators vary widely on the degree to which they are committed to any particular set of values. Some hold consistent values across time and situation. Others quite successfully accept conflicting values within a given educational context, leaving it to human adaptability to reconcile dissonance. Indeed, the degree of commitment or eclecticism is not clear in most educational practice.

I would contend that a proper general procedure for defining educational objectives is one which can accommodate a wide variety of choice across all of the above dimensions. However, any given educational program development can be seen as requiring, or at least being facilitated by, some ideological commitment.

DEFINE CRITERIA OF SUCCESS

There is another aspect of educational

philosophy which bears an important relationship to the definition of educational objectives. This aspect is the vigorous new trend (Wheeler, 1967) toward philosophical analysis of educational problems and processes. I would see the need for formally developed educational programs to meet the criteria of:

1. Existentialism, in providing for experiences which will square with the subjective impact of those referent situations of which they are intended to be samples or analogs.
2. Logical (essentially linguistic) analysis, in being at least internally compatible and not demonstrably false on the face of internal evidence.
3. Science, in being compatible with the weight of evidence external to the objectives and their derivation process, and especially in squaring with the law of parsimony.
4. Pragmatism, in being relevant to and serving the purposes which motivated a search for the answer to "what should we teach."

Thus, we can see educational philosophy as impacting on the derivation of objectives in two ways -- in defining the values which will guide selection priorities and in providing a basis for criticism of the products of our creative efforts. A set of epistemological issues remains for discussion in the next section.

STRUCTURE A REGION OF CRITERION BEHAVIOR

Organized structures of knowledge can greatly facilitate decisions concerning what to teach, particularly since learning may be facilitated by organization and structuring of the instruction. It is imperative that the individual seeking an answer to what to teach have a more satisfactory method than simply reaching for the nearest wooden horse because it happens to be near, even if it does come in the form of the latest structuring of the disciplines.

As Phenix (1964a) has pointed out, the principles and practice of ordering knowledge into systematic categories provide ". . . a valuable resource for curriculum-makers. How that resource is used is another question (p. 45)." I am fully in agreement with that view. Elsewhere (Phenix, 1964b) he has suggested in detail how realms of meaning can imply scope, content, organization, and sequence for curriculum. Here, I must demur. During the same conference in which Phenix outlined his realms of meaning, Tykociner (1964) described quite a different structuring of areas of knowledge. I can see no reason why a curriculum developer is compelled to accept one structure to the exclusion of another. In addition, Bellack (1964), in summarizing this conference, has pointed out that a school's responsibilities often extend beyond teaching organized fields.

In any event, if we can agree that available structures of knowledge (primarily those current with practitioners and only coincidentally those used in education) can serve as useful handmaidens to educational development, perhaps it will be possible to describe a useful role for the disciplines in structuring regions of criterion behavior without becoming ensnared into the traditional teaching of disciplines.

Structuring the region of interest is critical both to insure that coverage is comprehensive and that specifics are not generated out of proportion to the importance of a given subregion. The structuring process involves the following six steps, each of which will probably require some degree of iteration:

1. Identify and delimit major non-overlapping areas of criterion behavior. We should note that non-overlapping here means not involving the same social context. It does not necessarily imply that the behaviors to be found in these different contexts may not be closely related or even identical. Some of the areas at the most gross level might be differentiated by factors such as in-school or out-of-school; prior to graduation or after

graduation (or dropout); vocational, citizenship, or self-actualization behavior; etc.

2. Identify the best sources of analytic capability and data relating to each area. This process will interact dynamically with evolving structure of the region of interest. As increasing resolution of the structure is accomplished, it will become possible to evaluate sources of information in greater detail. Some of the general kinds of sources for structuring (and later analyzing) each major area include:

a. Competent practitioners, observers, and commentators.

b. Documentation used by practitioners in the field.

c. Descriptive models, relevant research, and other literature (such as formal knowledge structures) relating to the area.

3. Identify and define the principal dimensions serving to structure each area.

4. Define a structure for each area. Begin with a preliminary structure, trying it out against specific examples of relevant performance and expert judgment. Continue expanding and modifying the structure until it will handle all relevant specific examples with facility. This is not the place to derive an exhaustive listing of all relevant performances, but only to obtain reasonable assurance that the structure would have decent skeletal homomorphism with the total body of performances should they ever be exhaustively described.

ESTABLISH A BASIS FOR SAMPLING BEHAVIOR

There is almost no significant educational development having a region of referent criterion behavior which can practicably be described in exhaustive specific detail. Thus, one must either accept abstraction and sampling or entirely abandon the attempt to derive educational content from a presumed region of application. The difficulty with developments in the past is not that they abstracted or sampled, but rather, that the referent is either so general as to be vague or left unstated. The major plea here is to be explicit about the method and results of abstracting and sampling. By abstracting, I mean a kind of shorthand which implies clearly the essential characteristics of criterion performance without describing it in precise detail. By sampling, I mean selecting from a larger set of possible criterion performances (and it may be almost infinite) some smaller set for description and analysis.

This is hardly the place to review the extensive and accessible body of knowledge concerning sampling theory and practice (Kish, 1965). There are, however, three points which have unique relevance:

1. The structure framework discussed in the previous section should serve as a direct contributor to the definition of a sampling frame.

2. The sampling bases and weights for choosing from among different hierarchical levels (e.g., tasks versus specific behaviors) may be quite different.

3. The notion of sampling on bases other than frequency of occurrence in the population of behaviors in the presumed region of application is entirely valid.

4. Random sampling in this context implies enumerating at the outset all of the behavioral units from which sampling is to take place. Since avoidance of the exhaustive work involved in making such an enumeration is a primary motive, a kind of quota sampling seems much more appropriate for the more detailed behavioral levels.

With the establishment of a basis for sampling criterion behavior, we have completed the steps which I would contend have been most slighted in educational development. The remaining steps have a more adequate methodological base. Consequently, for the remaining steps, we will provide only a limited discussion -- primarily limited to placing the steps in context and suggesting references to more detailed descriptions.

ANALYZE BEHAVIOR

Given the delineation of referent

activities and sampling frame implied above, it should now be possible to proceed with a relatively straightforward task description and analysis. We will not try to summarize these procedures, since they are already described in detail elsewhere (Altman, 1966d; Miller, 1962). Suffice it here merely to identify the principal steps implied in this process:

1. Identify the obvious clusters of activities which might be performed by any one individual or team of individuals.
2. For each cluster or conglomerate of activities:
    a. Define the characteristics of the population likely to engage in them.
    b. Identify the principal purpose(s) and modes of accomplishment.
    c. Organize by time-sequence.
    d. Organize by functional relationship.
    e. Identify contingencies in and contexts of performance.
3. Enumerate tasks, eliminating obviously inappropriate and redundant items.
4. Describe tasks, including:
    a. Objects acted upon.
    b. Information guiding action.
    c. Tasks.
    d. Actions, including sequence, stimulus, processing, and response aspects.
    e. Indications of completion of action.

ORGANIZE AND SEQUENCE OBJECTIVES

Up to this point, we have been talking essentially about behavior outside of the school, except insofar as we might use some later phase of education or training as a referent context for designing an earlier phase. Now, however, we must come to grips with the problem of bringing behavior within the confines of pedogogical considerations. The referent behaviors identified in the previous steps are the starting point for the derivation, organization, and sequencing of educational objectives.

Tyler (1964) has suggested that one of the persistent problems in defining educational objectives is a tendency to confuse clarity with a high degree of specificity. What is essential is clarity of the behavior desired of the student, not maximum specificity.

Briggs (1967) very recently completed an exhaustive review of available knowledge concerning the sequencing of instruction in relation to hierarchies of competence. He uncovered a great deal of useful information, many obvious holes in our data and understanding, and no operational routines that would guarantee optimum organization or sequencing. However, there are some steps that seem clearly to be useful, if not essential to rational development:

1. Translate behaviors representative of the criterion situation into terminal objectives -- that is, statements of task performance judged suitable for the student upon successful completion of the educational experience under development. Thus, many of the specifics of the criterion context will need to be made less specific and complex.
2. Derive the subordinate capabilities (interim objectives) by working backwards from terminal objectives (Gagné, 1966). The prerequisites of given unit of content are that set of capabilities which, if previously acquired, would permit the learning of the given unit under a single set of learning conditions (Gagné, 1965a).
3. Continue the analysis of terminal task components until a level of simplicity is reached where it can be assumed that the capabilities are possessed by the student.
4. Group the behavioral hierarchies from the above according to:
    a. Stimulus similarity.
    b. Response similarity.
    c. Homogeneity of psychological processes (Altman, 1966d).
    d. Presumed optimum effective (motivational) impact.

e. Administrative convenience.[2]

f. Aesthetic preferences.

DEVELOP PERFORMANCE MEASURES

There is a well-developed technology which would be gratuitous to attempt to summarize here. Probably Glaser and Klaus (1962) have provided the most relevant summary. Horst (1966) recently completed an overview of the entire psychological measurement field, much of it relevant to the design and evaluation of proficiency measures.

DEFINE MEDIA

Briggs, Campeau, Gagné, and May (1967) recently summarized findings relative to different types of instructional media and presented a set of procedures that dovetail with the general outline of educational development suggested here. I shall not attempt to abstract their extensive work but recommend reference to it to anyone selecting media of instruction from a set of educational objectives. It is perhaps worth underscoring here the need to take into account both individual differences (Gagné, 1967) and the developmental stage of the target population (Bloom, 1964).

DEVELOP INSTRUCTIONAL MATERIALS AND PROCEDURES

Here, too, is a well-developed technology which I shall not attempt to summarize. The essential features of this design process are probably most accessible from the area of programmed instruction (Glaser, 1965).

CONDUCT PRELIMINARY TRYOUTS - EVALUATE PROGRAM

Lumsdaine (1965) has provided a detailed overview of the considerations and procedures involved in the assessment of instructional programs. Perhaps the most refreshing aspect of the programmed instruction approach to tryout and evaluation is the onus put on the development team to demonstrate educational value and the acceptance of empirical results as a basis for repeated revision, until satisfactory learning is achieved by the target audience. Markle (1967), in multimedia program development, has made empirical tryout an integral part of virtually the entire design process. Campbell and Stanley (1963) have provided perhaps the most cogent treatment of experimental and quasi-experimental designs to aid evaluation.

The methods and purposes of preliminary tryout and final program evaluation are overlapping and sometimes indistinguishable. However, preliminary tryout tends to be more directed at program modification during the design process, whereas final evaluation of the program is more suggestive of the appropriate scope of operational implementation and provides a legacy of basic information that can be useful in the initiation of new developmental efforts.

IMPLEMENT USE OF MATERIALS

There is a slowly accumulating body of evidence concerning the conditions under which educational innovations are accepted by instructional personnel and the community. It would clearly be premature to claim, however, that there is a technology for gaining acceptance. The one factor that does stand out, though, is the need to give the intended instructional personnel adequate opportunity to gain a feeling of participation, to be oriented and trained in the requirements of the innovation, to have their questions fully answered, and to ventilate their feelings, both positive and negative.

THE CONTRIBUTION OF VOCATIONAL-TECHNICAL EDUCATION

What has all the foregoing to do with the contribution vocational-technical education can make to the individual student, either at the secondary or post-secondary level? Over the long haul, obviously a great deal. As educational development becomes increasingly analytic, coherent, and explicit, it may become meaningful to think in terms of optimizing functions such as making educational experiences maximally relevant to probable later-life requirements. In terms of the immediate implications for the contribution of vocational-technical education, the picture is much less clear. I would suggest, though, that the technology of education and training development permits:

1. Accommodation to the inter-individual differences that characterize all age and grade levels. This means that vocational-technical education at both secondary and post-secondary levels can break out of the mold of skill achievement being tied to time spent. For equal expenditure of time, students can be at quite different skill levels -- with different implications for their entry level on the career ladder.
2. Accommodation to intra-individual differences such that each individual can be qualified across a different profile of jobs.
3. Truly specific job training to be much more efficient than was once the case.
4. A much more integrated and flexible melding of vocational and non-vocational educational experiences, combined with a more precise knowledge of the student about himself and his probabilities of success in future courses of action (Cooley & Lohnes, 1966, Ch. 11).
5. Much more realistic information about the degree of irrevocability and/or cost when various educational decisions are made.
6. An opportunity to move from secondary to post-secondary vocational-technical education with maximum positive transfer and minimum waste.

NEW EFFORTS

If these additional capabilities to contribute to individual welfare are to be exploited, the following efforts will be required:

1. The formation and support of development teams including genuine expertise in the relevant behavioral technology.
2. Explication and commitment to the values out of which educational objectives and the supporting materials can be derived.
3. Certification of products of the new educational experiences according to what they have demonstrated they can do, in terms meaningful to the vocations they will enter.
4. A degree of specificity and accessibility of cost records, which has not characterized most school systems, that will support cost-effectiveness analyses for specific educational programs and units of instruction.
5. Willingness to accept performance measurement as an inherent part of the quality control process, not just for students but also for the instructional system.
6. A new level of allocating resources to analysis, evaluation, and planning as contrasted to operation and maintenance of the instructional system.

FOOTNOTES

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[1] Whether an element is considered a resource or a constraint is largely dependent upon one's point of view. The limits on any resource can be conceived as a constraint and the region within any constraint can be conceived as a resource.

[2] Interacts with and is largely dependent upon the choice of media.

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Rhoda W. Baruch*

REACTION

Dr. Altman's paper (1967) is a well-organized, well-explicated discussion of the steps involved in the process of educational program development. It is sound and indisputable; I find myself in general agreement. I was asked to respond and I can neither further clarify nor contest what has been presented. Dr. Altman starts with the assumptions that change will be occurring at an accelerating rate and that it is worth our while to pay some attention to the processes by which we try to guide those changes. He observes that the central focus has been on curriculum and does not expect this emphasis to change. His central question, then, involves deciding *what* to teach, *what* to accomplish and he sets himself the important task of providing a technological base for educational program development.

How to guide these changes, he asks. These changes which are occurring have implications for our allocation of resources, involving a shift from investment in maintenance of our programs to allocation of resources for development of new programs. Dr. Altman recommends that a role or team be instituted and charged with the business of changing and developing programs. Dr. Altman supplies something of a technological base for carrying out such development. He points out that the later stages of development tend to be easier; the early phase is generally more difficult to articulate, involving as it does the very problem statement and the criteria which we may wish to achieve. In the early stages of the process, we must identify the milieu forces; identify the resources, constraints and contents; and delimit our region of concern. At this point we need to define an ideological base and the criteria of success.

The system hangs together well but rests heavily on the crucial step "Define the criteria of success." It is true that once this much has been done, the rest falls into place. What do we want the educational process to accomplish? It is in connection with this step in the process as Altman describes it and the prior step, that of defining an ideological base, that possibly my comments and work can augment the Altman model. We start with a clear system of analysis supplied by Altman and I am afraid what I shall add is a certain element of disorder and confusion. I want to increase the entropy of the system. Altman's concern is with the teacher or curriculum designer who is confronted with the need to make a decision about what to teach and he provides a framework within which the decision can be analyzed and made. I want to shift our focus to the student and the later product of the vocational-technical education system and to maintain that among the behavioral objectives of the education process (and we can include guidance-in-education here) is the inclusion of the mastery of a decision-making process or schema similar to the one provided by Altman for the curriculum designer. During the school years while teachers are deciding what to include in the curriculum and what to teach, students ought to be deciding what to learn and to what they should be paying attention.

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Mary Jean Bowman (1967) spoke of economics as the science of decision-making and Altman provides us with an excellent model quite "generalizable" for going about making a set of decisions. Can we get every vocational-technical school graduate to become as adept as Mary Jean Bowman or James Altman in this process of decision-making? Does that sound too grand and unrealistic? There are those in our society, philosophers, scientists, who maintain that "The power of deciding is what makes men human" and "Human existence emerges out of decision-making activities." In our vocational-technical education, we want to avoid dehumanization and subjugation of the man to the larger organization or the machines. Autonomous men who can exercise choices freely become our criterion for the output of the "system" or school program.

It has become extremely important for us to reaffirm our free will and to assert this decision-making as an essential part of the human existence. I have speculated about this question, why it has become so important to us at this time to emphasize the power of deciding. There are many reasons one might give: for one thing the presence of computers that can "think" jeopardizes man's former uniqueness in this regard. But, we respond, man still has his *will*. Also with the prevalence of change, we cannot rely on old certainties and traditions and we have to decide many things formerly accepted. Again, we have been exposed to and are aware of powerful economic forces and overwhelming scientific forces which make people feel awfully small, helpless, powerless. With exposure to mass communication, we have such an enormous homogenizing force that once again we seem to want to protest and assert some individuality through choices and decisions.

In Guidance, the professed goal is something various people call "a sense of agency," "a personally determined career," "an independent decision-maker," "a conscious artist of one's own career," one who can bear the responsibility for choice and decisions. One rationale for guidance, Van Kaam (1965) suggests, is that a person can regain his freedom in this one sector of life. I would like to insert this kind of ideological orientation into Dr. Altman's ideological base. If it has limited significance for curriculum development, then it is more appropriately a guidance goal, but should be part of the same base for vocational-technical program development. An interesting distinction made by Tiedeman and Morley (1966) may be relevant here. They speak of vocational success in youth and adulthood today as dependent on two kinds of competence. The first they call *Occupational Competence* which is competence in acquiring and using the skills and knowledge required by the individual's commitment to a particular program or occupation. The second they call *Vocational Competence* which involves competence in dealing with changes in the vocational life in a manner which will enable the individual to achieve and maintain a continuing degree of mastery over his vocational environment. Morley's study (1967) of adults undergoing a career crisis of losing one's job illustrates varying degrees of vocational competence. Her study of men coping with the task of re-establishing career structure disrupted by their employer's bankruptcy shows some real differences in the strategies employed in coping with the crisis. She cites one example of a masterly adaptive response pattern and others of varying degrees of vocational competence. Some men were tuned in to the impending crisis much sooner than others and prepared solutions which they could implement at the time of the bankruptcy. One took the opportunity to "better himself." The others were either quiescent or utterly defeated by the loss of work. The notion of vocational competence as something describable and separate from occupational skills and occupational competence is the one I want to suggest as complementing the behavioral goals and objectives considered by Altman.

A small research project which I undertook several years ago when I was working with Anne Roe (1964) involved studying the decision-making process of adults who had just made some major changes in vocations. Some were in fact in MDTA programs or adult vocational-technical education programs. Others in that study included bank officers, or insurance company employees such as the former Marine recruiting officer who became a group underwriter, a computer programmer who went into teaching, a bakery dough-roller who became a warehouse order checker, etc. There were some diversity in the levels and kinds of jobs represented. All had made changes within the year. When asked to tell about how they came into their present line of work, most people did not seem to think of themselves as decision-makers. They did what they considered they had to do, without any alternatives visible to them. They apologized for a "random process" in their choices; they emphasized contingencies and external influences. They tended to deny, either explicitly, or by the way they told their stories, that they had or valued freedom of choice in so far as their positions and vocations were concerned. Their careers, including major changes, just happened to them; as one subject put it, "I don't think I had really ever decided anything or thought about it at great length. You just go on." Although in this study, we had a problem solving model which I wanted to apply to people's decision-making, I found I could not do so because of the denial of autonomy. Two subjects, in another related study, college professors, also presented themselves as "fortune's darling" or "I lived my destiny." Maybe people are escaping from freedom, as Erich Fromm suggests. Perhaps there are realms of more relevance or salience for the expression of the kind of autonomy I was interested in. I define autonomy as the

1) concern with or consciousness of exercise of will or choice

2) a sense of a capacity for making the choice.

3) an awareness of existing alternatives for choice and action.

This definition is like Riesman's (1954) use of autonomy, which he says, "requires self-awareness about the fact of choice about possible ways of living."

In my current research, I define five realms of autonomy where exercise of will, choice, decision-making may or may not be acknowledged. For example, there is this realm of vocational development. There is also the realm of daily work, and by choosing a group of self-employed men as subjects, I found much autonomy expressed in this realm of their life. These men make many decisions during the course of their day's work and acknowledge their responsibility about choosing and deciding. These self-employed men include a variety of artisans and craftsmen: a sculptor, printer, stained glass designer, goldsmith, picture framer, shoe repair man, floor waxer, food broker, appliance repair man, etc. They are the affirmers of freedom of choice - the non-organization men. Some of them exercise autonomy in the development of their careers as well. The other realms which I designate as possible realms for the expression of autonomy include the political, consumer behavior, and personal behaviors. We are in the process of analyzing the interviews and test materials, and I believe we can develop measurable criteria for such concepts as a sense of autonomy in the realm of their daily work or in their career development. Let me describe the way we go about this. We ask people, "How did you get into this line of work," as one of several such probes. We have developed a system of content analysis of these interview materials. First, we note whether there is recognition of existence of a decision-relevant problem, or whether this decision-relevance is denied or delegated. We also rate responses according to the exploration of environmental resources. (Altman calls the corresponding steps, identifying the milieu forces; identifying the resources; contraints and contexts, etc. The similarity of the models is evident).

We find in some of these subjects what we call "creative opportunism." These subjects are not only aware of alternatives, they frequently create alternatives and options. And we can rate them on exploitation of chance, fate, laws, advice, or other external resources. I am learning from these subjects. There is a mode of using these external factors in creating a career, rather than in being victimized by these factors. They use frequently expressions such as, "I decided," "I saw the chance," "I saw the possibility of." Involved in our measure of autonomy, which we are still in the process of developing, is also an exploration of the self, with personal resources, needs and limitations all possibly considered. Our study of adult careers may lead us to a better conception and assessment of autonomy, a criterion which I would submit as an additional goal of vocational-technical education.

Through the content of vocational-technical education, I can see a person developing a sense of his own efficacy in making and doing things, a sense of occupational competence. Through complementary guidance service and introduction of choices and decision-making situations in the school setting, I can see a person developing the sense of autonomy that can help direct a later life in a world full of change and uncertainties. With research and continued effort, I can see even such criteria as a "sense of efficacy" or a "sense of autonomy" come within the scope of measurable behavioral objectives. And Altman's model of decision, proposed and useful for the educational program planner, finds further applicability as it filters through the system to be mastered by the vocational student for developing the program of his life and planning for the inevitable changes in such programs.

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SOCIOLOGY

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SOCIOLOGICAL PERSPECTIVES AND VOCATIONAL-TECHNICAL EDUCATION

INTRODUCTION

The problems of vocational education are bound inextricably with the meanings and functions of work in the changing technological panorama. In order to obtain a comprehensive view of the present state of vocational education and its place in the overall world of work, it is necessary to consider the meaning of work through history and today, the value and function of work in the contemporary society, and what impact changes in social systems and values will have on work in the future.

The varying historical interpretations of work demonstrate that dynamic and future-oriented planning is imperative. It is startling how relatively new are most of our present-day commonly held assumptions about the realm of work. Change is not a process to be held back; the Heraclitan stream flows on whether or not we admit its eternal progress. Even now technological advances and social upheavals are carving new patterns into the schemata of institutional systems and social functioning. These inscriptions are man-made, but not clearly visible to everyone. It is the aim of this paper to examine vocational education from a sociological perspective and to underline what new efforts need be undertaken to make the world of work more viable and to match the pace of social change.

HISTORICAL PERSPECTIVES

Through history the meanings of the term "work" have undergone striking transformations. The Greek word for work, "ponos," has the same root as the Latin "poena" designating sorrow. Work was thus a curse; according to Homer, the gods out of hatred for mankind condemned men to a life of toil.[1] Further, the relationship of the active life to the contemplative life was similar to that of war to peace. As battles are fought so that there may be peace, activity, in the ideal sense, eventually culminates in contemplation. The Greek belief was that "truth" can be revealed only in stillness, and man's highest endeavor was the pursuit of truth. Thus work was an intervention, a burden man bore because he was chained to necessity.[2]

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The Hebrew tradition and primitive Christianity regarded work as a punishment laid on man by God. The Talmud states: "If man does not find his food like animals and birds but must earn it, that is due to sin."[3] Later, however, work became an instrument of purification, charity, and expiation; it was good to share the fruits of work with the poor. As Weber well documented in his classic piece, *The Protestant Ethic and the Spirit of Capitalism*, Calvinism brought a new attitude toward labor, binding the tie between economic gain and spiritual salvation. It is God's will that men must work; only through toil may they prove their worth, their election to the Kingdom of God. This brand of "worldly asceticism," demanding methodical, disciplined, and rational work, laid the foundation for the division of labor and the expansion of the industrial order. The stewardship of riches provided a philosophical rationale for a social stratification system. It permitted recognition of distinctions in wealth, prestige, and power and the requirement that those in control of society take care of those not so fortunate, on a minimum level of sufficiency, in order to maintain motivation for hard work and its joyous fruits. Maintenance of the poor was at a level not to encourage laziness or shiftlessness. The functioning and stability of the work system had to be sustained and the stewards of the poor acted accordingly in order to sustain their dominant position in society and to be quaranteed divine grace.

Tilgher has noted that since Calvin's day work has not completely lost its dignity, but its relationship with religion has lessened. Having taken on an importance of its own, work "stands today the watchword of nations, the creed of the one really vital, sincerely felt religion of the age."[4] Work takes on this heavy significance in part because man gains joy in mastering the external world and feeling his personality triumphant. On the other hand, work puts man in a state of dependence on the external world. "The devine madness of labor seems an unbearable chain, binding him to things outside his own nature, locking his soul into a narrow prison where its energies are impoverished and weakened."[5]

Adam Smith and Karl Marx grasped an essential point in their recognition of the "productivity" of labor. Both thinkers were in accord with public opinion when they regarded unproductive labor as perverted and parasitical. It was, in fact, productivity which was the reason for the elevation of labor in modern times.[6] Labor's status spectacularly rose when Locke discovered it was the source of property and wealth.[7] Laborers, once slaves who toiled to provide the vital necessities for others, were "freed" to labor and have standing in the community. Later, leveling ensued and progressed to the point that now almost all men labor in order to "make a living." All men have been reduced to the common denominator of securing the necessities of life.[8]

Today the notions of making a living and that work must be "useful" require harmonization with the condition of the absence of work and the concomitant problem of leisure. A number of interrelated events, situations and conceptualizations occurred over time to change the nature of work and to give it a different role in the life of man. The profusion of ideas and bursting enthusiasm emanating during the Renaissance was concerned with a view that life was observable, measurable, and predictable. The replacement of theology by science and its method for explaining man and nature led to a rapid development of technology and its application to every sphere of human activity. Man soon created mass industrialism, and concomitant complex and highly differentiated social systems. Science also led to the substitution of natural time by durational time. Instead of measuring or living by the cycles of the seasons or sun and lunar systems, man created hour, minute and second measures and time became the principal factor in developing perspectives, policies, structures, and functions in relation to all human activities. The Protestant ethic provided an ethos and rationale for the mastery of man over nature and progress via productivity. These conditions and themes have resulted in technological development at such a rapid rate and magnitude that today's modern societies, especially the United States, have problems such as men with "time on their hands," routinized and boring work, surplus unskilled able-bodied workers for high-skill jobs, an increasing incidence of worker displacement because of a rise in automation of industrial processes, and a shift from work as a central life interest to non-work systems. I will now examine more closely the function of work in the contemporary period.

CURRENT FUNCTIONS OF WORK

Ralph Linton identifies five functions considered to be found in any situation defined by society as a "job"; these are: income, regulating life-activity, identification, association, and meaningful life-experience. In light of these functions, Friedmann and Havighurst[9] examined five occupations: unskilled and semiskilled steel workers; coalminers; skilled craftsmen; sales people; and physicians. They found that all five value work about equally as 1) association, 2) a routine which makes the time pass, and 3) a means to discover self-respect and secure respect or recognition from others. Workers of lower skill and socioeconomic status are more likely to see work as having no other meaning than earning money, while skilled craft and white-collar workers attach more extrafinancial meaning to work. These self-reported functions illustrate how the meanings of work are related to the social structure.

Another study by Morse and Weiss[10] shows that work serves other than economic functions for middle- and working-class men, but the nonmonetary functions differ between the two strata. Data from personal interviews with a national sample of employed men indicate work gives men a feeling of being tied into the larger society and of having something to do; for the majority, work is more than a means. When asked if they would continue working even if their financial situation did not necessitate employment, 80 per cent replied affirmatively. The reasons why they would work again illustrate class variations. For the middle class, working means having something interesting to do, having a chance to contribute and to accomplish things. The working class defined working as synonymous with activity -- the alternative here being boredom.

Dubin's study of the central life interests of industrial workers indicates that they have a sense of attachment to their work and workplace without a corresponding sense of total commitment. Workers developed significant primary relationships mainly outside the work sector, their industrial jobs are means to other ends and were not as alienative or depressive as might be commonly supposed.

> The characteristics of industrial work that are alleged to be disturbing to the individual (monotony, repetitiveness, mechanistic character, and over-specialization) are the very features that make obvious to its participants the nature of symbiotic or technological interdependence. In short, industrial work may be functional for the society because it sharply etches for the individual some awareness of the division of labor and its resultant interdependence.[11]

What Dubin suggests is that, for the majority, industrial work world is not a central life interest, but that industrial employment is marked by a certain Durkheimian organic solidarity. Despite the heterogeneity of the workers' backgrounds and nonwork involvements, and despite the lack of formal consensus, men have a solid sense of interdependency derived from their technological experience.

Other investigators are reaching similar conclusions but for slightly different reasons. Factory workers now control the work place through a combination of union organization and informal group controls. No longer do they work a twelve-hour day and leave the plant exhausted. In one sheet and tube mill in

Gary workers cook their meals on stoves attached to fiery furnaces; take naps on the mattresses they bring in; take "breaks" as needed and control the "bosses" through slowdowns or stoppages of production. Slowdown is a technique "to cut the management down to size," and "to create kicks and break monotony." Work can be undignified but real fun![12]

The meanings and functions of work vary situationally and individually. Although the studies reviewed here do not present a totally consistent picture, they indicate some general trends which must be kept in mind as the state of vocational education today and the shape of the future is considered.

ENTERING THE WORLD OF WORK

An excellent appraisal of the administration, structure, and orientation of vocational education is provided by Kaufman, Schaefer, Lewis, Stevens, and House in *The Role of the Secondary Schools in the Preparation of Youth for Employment.*[13] The authors concentrated on both the adequacy and image of vocational education, and their volume presents an outline of major deficiencies.

Concerning effectiveness, it was found that there is slight relationship between the proportion of enrollment in various vocational programs and occupational distributions in communities -- thus the small enrollments have little impact on tremendous manpower needs; the percentage of graduates who find jobs directly related to their training is less than one-third; vocational students are less likely than other students to discuss either course choices or occupational plans with a guidance counselor; and the ratio of students to counselors, 440 to one, is unrealistic plus the fact that counselors tend to spend most of their time with college-bound students.

Also, it was discovered that cultural stereotypes tend to restrict programs available to girls as well as the girls' self-concepts; the only vocational program open to girls which can accommodate a large number is office-oriented. Girls do not protest their limited choice range since they have learned that girls should not prepare for "important" jobs because their ultimate goal is marriage wherein any lengthy training would be wasted. This stereotype is not in consonance with the reality of the labor needs of the market place, changing values regarding women in gainful employment outside the home or career opportunities and investment for women.

Thus, the schools' output of graduates lags behind manpower needs, while the students who are enrolled in programs receive inadequate guidance due to the shortage of counselors. Moreover, an even more crucial deficiency is the fact that training is often unsuited both to the reality of the employment market and the potentialities of individual trainees.

Vitually connected to these problems is the question of image. The survey of secondary school vocational training showed that teachers in comprehensive high schools rather than vocational schools rate vocational training low and are skeptical of its effectiveness; vocational students are presumed to have inferior abilities; potential employers are pessimistic of the programs; and union officials reluctant to give credit for such training. Employers and union officials are not adequately represented on advisory committees -- thus resulting in under-utilization of community resources. With these problems in view, the authors made recommendations aimed at improving both the effectiveness of programs and the image of vocational education, now considered by many as a "dumping ground" for those of inferior abilities.

Among the recommendations related to vocational offerings and the needs of both students and community, the researchers stated that secondary education should be reoriented to serve also students who expect to obtain employment immediately after graduation but do not wish to comit themselves to a traditional vocational program; in this way students could become familiar with a core of skills comprising occupational clusters and, thus, be more likely to find jobs congruent with the needs of specific communities. Also, the physical setting, freedom of movements, individualized instruction, and stress on physical rather than verbal skills characterizing vocational programs appear to hold potential in motivating students who lack interest or ability to benefit from more traditional offerings; students from disadvantaged backgrounds who lack verbal facility could profit from new and broader programs designed with the goal of occupational familiarization rather than skill attainment. After initial emphasis on guidance, movement into specific training programs could be more effectively encouraged. Additional imperatives are that a wider range of occupational preparation should be offered to female students; reorientation of programs must advance beyond the traditional organization limited to agricultural, trade, and industrial emphasis; and educators must update teaching methods in line with recent developments, till now largely ignored, in curriculum construction, scheduling procedures, and grouping patterns which recognize individual differences.

In the administrative realm, the authors urged formal attention to public relations and changing needs of the community by assigning staff specifically to such tasks. Teachers should be trained to understand more fully the conditions under which students learn, rather than merely the techniques of teaching. Advisory committees should be structured in such a way as to promote the significant participation of business, industrial, governmental, and labor representatives.

The above discussion highlights but a few points of the Kaufman study on the role of secondary schools in preparing youth for employment. While grave inadequacies of vocational programs are apparent, specific schemes for improvement are also in view. The impact of any proposed change will depend heavily upon the communication process. Altman's behavioral view of education is particularly relevant here. Innovators must be explicit and honest about goals, rather than grandiloquent or self-deluding, and must identify the milieu forces involved in the developmental process.[14] Gobboney urged systematic efforts to define problems and to "come to gripe with the value crisis posed by poverty and unemployment." Furthermore, the link between practitioners and theorists, between adopters of change and innovators must be strengthened.[15]

Some educators would prefer to eliminate vocational offerings entirely; these individuals stress that a basic education is, in the long run, more valuable to youth than a specific one. Undoubtedly, the debate over vocational versus general education has served to retard the progress of vocational. It is not the purpose of this paper to indulge at length in this dialogue. Briefly, the perspective employed here is that vocational education is the viable available path for large numbers of people.

IMPERATIVES FOR ACTION AND RESEARCH

Today the labor market is quite complex, and certain minimum skills are essential for those seeking jobs. Rapid technological change is diminishing the need for unskilled workers, while the bulk of employment rise is in occupations which demand certain educational prerequisites.[16] Furthermore, these prerequisities are related not only to the need for higher skilled personnel, but also to the phenomenon of "credentialing." Berg has noted that the availability of educated people in the labor market has prompted employers to hire those with "higher-than-needed" educational attainments. While this pattern is sometimes justified with the assertion that the "over-educated" are needed for promotion purposes, the fact remains that salaries are determined at time of job entry on the basis of education rather than productivity.[17]

This pattern is also observed by S. M. Miller, who finds that ability and performance weigh less on the hiring scales than documents "proving" educational accomplishments. For the underprivileged, education has become less a path of upward mobility and more a means of exclusion. Needed now are new credentials, more ways of acquiring credentials, greater flexibility, and some restructuring of jobs. While several poverty programs and the Job Corps have made some headway in demonstrating work preparation schemes alternative to academic ones, the gates to employment are still guarded tightly. As Miller insists, for many, credentials remain "walls," not "doors."[18]

Among the groups particularly affected by these developments are youth and adults, out-of-school youths, adults at work or unemployed and the mentally and physically handicapped in current vocational rehabilitation programs. Older persons, part of the "hard-core" unemployed, face especially difficult hurdles such as discrinination. Examination of manpower training programs shows that few men respond to conventional publicity; recruitment into the programs is usually best facilitated through personal contacts -- such as in barbershops, clubs, and churches. Often the trainees' personal problems perpetuate their joblessness. Many men are not emotionally free to learn, since they are harried by family and financial problems. Fitting the man to the job, a matching process, involves the needs and concerns of primary groups such as the family. Counseling, it appears, is essential in order to provide practical guidance and to support morale. But counseling by itself is insufficient, the hard-core unemployed usually need general, as well as vocational education and access to economic resources in order to develop and bolster skills in the presentation of self, literacy, language, hygiene, and human relations.[19]

Obviously, these needs are also apparent among unemployed youth, though the factor of time renders their deprivation somewhat less severe. For example, a remedial reading course may be taken with far less awkwardness by a person of school age than by an adult long past the "educational" stage of his life who may also be burdened with the responsibility of family support. Also a young person may be kept in school as a means of keeping him out of the labor market.[20] In doing this he meets community expectations and does not take on a deviant role, the unemployed worker. Nonetheless, it is apparent that all age groups generally share certain basic needs -- namely training, guidance, and financial assistance. Individuals must be made aware of the complexities of the labor market, the options available to them, and peripheral requisites such as presenting themselves and literacy, as well as taught the technical skills necessary for work participation.

It has been shown that workers employed in higher status occupations attach greater extrafinancial meaning to their jobs than do those in less prestigious occupations. The concept of status plays a large part in recruitment of students and general attitudes toward vocational education. For example, the "blue collar" jobs to which some trade and industrial programs lead are considered to some extent as "dirty work." It has been noted that poor people forced out of work by technical advances resent make-work training programs which keep them near the bottom.[21] Some critics of vocational education object to its role in training the urban disadvantaged, primarily Negro population; rather than converting alienated or unskilled persons into productive members of society, these programs, claim the critics, only serve to justify the inferior position of Negroes in terms of their alleged "natural inferiority." Further, it is stated many problems indigenous to vocational education have resulted from the "dumping" of poorer students into its programs.[22]

Again, these problems are related to the issues of both adequacy and image. Concerning the concept of "dirty work," I have previously suggested that service may be the crucial variable in explaining dirty work.[23] That is, dirty work done by necessity, because of lack of other skills, gives an aura of servility. On the other hand, dirty work because of a real or perceived service orientation gives an aura of nobility. Usually dirty work is stereotypically allied with low status and nonprofessional jobs -- the work that someone has to do since society cannot exist without it, while "clean" work is associated with professionalism, higher-status jobs, and the presumed superiority of the white-collar worker.

However, this dichotomization fails to take into consideration the variations in work conditions of jobs in both low and high status positions. Nonprofessional work can be clean, too. Work conditions in many modern factories are characterized by sanitized surroundings, good lighting, and pleasant accouterments -- atmospheres comparable to business offices. Yet, the stereotypes persist. One must ask, then, what kinds of persons are attracted to dirty work occupations; do persons engaged in dirty work occupations exhibit behavior patterns within and without the work system basically different from those in higher status occupations? Suggested is a matching process in which personality characteristics, motivations, self-image, experience, and environmental factors are considered in recruitment, training, and maintaining workers in so-called dirty work occupations.

Another question for study is in taking on dirty work, and in most instances a quite needed service which others refuse to do, can an occupation increase its status or power? My guess is that it does. Stereotypes and images do not die quickly. One strategy is to capitalize on the vital usefulness notion attached to most service occupations and to assist occupations in organizing to improve their power, self images, and financial and psychic payoffs. Workers require a stake in the institutional systems of society and to be involved in the competition for scarce rewards and gains. The reallocation of resources as demonstrated in the anti-poverty program is an example of one means of reducing inequalities inherent in a stratified class system. Reallocations for revamping the image of vocational and service type occupations involves funding of programs not only for training but for status enhancement, and imagery of vital need for the public welfare. The closure for a service, whether it is real or perceived, modifies the supply-demand ratio, and scarcity means growth in power, rewards, and status for the occupation.

It must be emphasized that one cannot understand the workings of an occupation's internal system or its inter-occupational relationships without considering the larger work system of which it is a part. Thus, sociology which has devoted considerable attention to bureaucracies and institutional functioning, is a discipline directly involved in research relevant to some of the central issues cited here.

A few examples are sufficient to illustrate this last point. A work system consists of a large number of occupational groups organized into a pattern of interrelated roles in which each role holder presumably is aware of the role of others. Theoretically each role holder has a clear idea of what is expected of him and what he expects of others. Role expectations is used to characterize this process. However, a stable system of role expectations within a work system is almost impossible to attain because of multiple organizational hierarchies, each with a complex role system. In the hospital work system there are administrative, medical and nursing hierarchies which often contend against one another for power. Who should do what and when and to whom is often obscured in the struggle for power. Work systems have norms to govern role performance and to demarcate areas of responsibility. Norm conflict is found in all work systems and generates ambivalence and ambiguity in behavior of members both within and without the occupation. These characteristics of work systems suggest approaches for manipulating interaction and for modifying structural elements of a system so as to enhance the position and power of non-professional occupations.

Sociologists working on the problems of organizational and interorganizational analysis claim that most bureaucratic service work systems such as schools, hospitals, and welfare agencies are operated for the benefit of the staff rather than for the client. The same can be said for profit-type work systems. A new sociological specialization is the client centered bureaucracy with efforts to develop new types of work systems around the needs of clients. The importance of this development is that occupational systems which can identify and collaborate most effectively with clients in bureaucratic service institutions will have another means to improve their work conditions, status, power and rewards.[24]

Unions and occupational and professional associations have important roles in improving the status of non-professional occupations by altering the stereotype image held by the public. A frequent tactic is for the leadership to "sell" the service value of the occupation to the populace, while providing identification, loyalty, self-control, education, and socialization for the members. Concurrently, associations must combat the opposition of related occupations, equally concerned with carving out their own positions in the status hierarchy. The major point here is that unions and bureaucratic organizations are particularly potent forces in building and changing orientations toward work, as well as affecting the public image.

Reference group theory offers further insight into how groups vary in their assignment of status to jobs. It is noted that in the Hollingshead-Redlich system[25] occupation and education are the major components in determining social class. Occupation is considered to reflect the skill and power of the individual as he functions in society, while education is taken to reflect both knowledge and cultural taste. This is one attempt to measure social class objectively. However, individuals in their day-to-day lives utilize a variety of informal "scales" which are developed in large part through reference groups. How persons rate themselves and others depends on their own position in the societal hierarchy and the range of vision possible from that position. In one phase of a study of rehabilitation counseling[26] a sample of the national population were asked to rate twelve occupations. The results showed differences by respondents' own social class in the occupational rankings. For example, psychiatrist was rated higher by the upper than lower classes, probably indicating that the occupation is more visible to those in the upper strata. They have more contact with this professional than do others who may be influenced by the "head-shrinker" image and debunking of intellectuals. Reference group theory, which recognizes the extreme flexibility of prestige and status, provides a major approach to the "image problem" in vocational education. Through more precise understanding of the dynamics of group image-making, the strategy of recruitment into occupations hampered by personnel shortages may be more concretely designed.

THE FAMILY KINSHIP SYSTEM

Another force influencing work orientations and also career selection is the modern urban kinship network. I have previously elaborated that the family is as much involved in producing changes in other societal systems as it is required to adjust to social changes produced by non-family systems.[27] Thus, in the occupational and educational spheres, the family must be viewed as both a dependent and independent variable.

The kin system is composed of nuclear family units highly integrated within a network with the associated relationship of aid and mutual assistance that develops along kin lines and over several generations. In interaction with other institutional systems the family assumes varied stances; it may act directly to promote its own self-interests, it may integrate its own needs and demands with those of other systems, or it may adapt its behavior in accordance with other institutional imperatives. In other words, at times the influence of the urban family is felt directly by producing specific changes in the policy, structure, and activities of other societal systems, such as economic, governmental, or educational ones. Under other conditions, influence is less directional and more reciprocal, blending the normative requirements of the family-kinship with other systems. In still other circumstances, the family-kinship structure has little influence on other systems. What is significant about this approach is that it differs from the common notion that the family is subservient to and must constantly respond to the functions and demands of stronger institutions in order to survive.

In view of the common understatement of the family's influence, sociology needs more definitive studies on the noneconomic factors in occupational choice and career mobility and, specifically, how family concerns confound the rational decision-making model associated with the economic marketplace. Such studies would make a distinctive contribution to general theory by elucidating the variations, and their causes, from the currently held hypotheses concerned with the "long arm of the job." The predominant belief today is that, in a highly differentiated society, economic opportunities are not confined to any one geographical area, segment, or class of the society. One moves to the best opportunity and makes a decision to do so after treating the problem objectively and scientifically. In the business and industrial worlds, movement is along a career line which provides increased payoffs as one climbs a higher rung of the ladder; in the professions the individual changes positions because of increased opportunities for using his talent and also, perhaps as a consequence of motivation rooted in an "other" - oriented service tradition rather than a market place ideology.

One approach to this problem is to classify the factors which might influence the decision-making process in occupational choice and career mobility as follows: 1) financial reward, 2) working-place satisfactions, and 3) family concerns. Considering factors of monetary gain, one might compare an individual's current income to that of the new offer and determine the amount of increase necessary to effect a decision to move when the work situation and family concern factors are controlled. In the analysis of the work situation, one evaluates current and potential conditions of job satisfaction: interpersonal relationships, opportunity to use talents, non-financial rewards, and security. Family concerns are viewed as both constraining and influencing. Under constraining one considers: 1) the family's involvement in the extended kin network, real or perceived commitment to it, gratifications received, and exchanges and services performed; 2) the wife's current career status or occupational ambitions, and friendship patterns; 3) the child's friendships, educational status, health condition, relevance to the stage of the life cycle; and 4) involvement of the family in the community, social relationships, and recreational activities. Positive or stimulating influences in occupational choice and career mobility are: unsatisfactory kin network relationships; the wife's gain by relocation in terms of job, educational opportunities, improved interpersonal relationships; improved opportunities of the children for education and social relationships; and the desire for new experience. Moreover, the balance between supply and demand for workers in a given occupation may be considered an important intervening variable in the study of the relationship of non-financial factors to career choice and mobility -- and certainly a crucial factor in assessment of vocational training.

There is no doubt that the family, as the primary socializing agent of the child and later, throughout other phases of the life cycle, as a continuing source of emotional and frequently financial support for its members, has significant impact on career choice. Not only does a young person develop a particular perspective of what he should be doing, what is expected of him, and what his specific societal role entails, but he is also limited by the practical resources his family can contribute toward the achievement of his desired goals. For example, as mentioned by Kaufman and others, vocational education programs tend to offer limited curricula for girls. They do not object to the narrow possibilities; rather, they have learned through socialization that their primary role is destined to be that of wife and mother. Their own self-concept was limited, as was, in most cases, monetary backing for more ambitious goals.

Further, a child of poverty has a far narrower range of vision of occupational choices than has an affluent child. Thus, a disadvantaged youth may have limited aspirations not only because of the guidelines given him during family socialization, but also because he personally has infrequent exposure to certain "higher" job levels. His view of the overall occupational structure is somewhat stilted by underexposure.

Leaving aside for the moment poverty-based mutations of the socialization process, several additional comments are in order. It was noted earlier that some bureaucratic systems such as schools tend to operate more for the staff than the client. At least in the home, the child receives some specialized treatment, extreme versions of which have bred the phrase "the child-centered society." For schools in general, and vocational educational institutions in particular, there is a definite advantage to be gained from placing the child at the center of the learning process. Minelli and Benton have deplored the current fragmentation of knowledge and the development of learning into "nothing more than a process of accumulating a mass of meaningless fragments which are presented in isolation and are retained at all.[28] Effective learning requires that the pupil be the focal point in the process, and given some freedom that he may progress at his own speed; subject matter, too, must be treated in a flexible manner, utilizing a varied, not rigid, use of time. Rather than mere regurgitation, students must, as Bowman contends, "learn how to learn"; and until schools have taught this skill they have not accomplished their job of vocational preparation.[29]

ENVIRONMENT PLUS

Even when one exposes the child of poverty to realistic occupational goals and induces positive changes in his self concept and role performance these gains are short lived unless accompanied by basic modifications in the family's posture, motivation perception, and resources. The most important finding from research in this area is that "permanent" individual change in behavior is almost impossible to obtain unless the group, in this instance, the family, is involved. The recent administration reorganization in the Department of Health, Education, and Welfare with the creation of the Social and Rehabilitation Service is a recognition of this fact. One must treat the physical or social disability or handicap of the individual with consideration to its impact upon the non-disabled and the support or lack of support given by members of primary groups to the disadvantaged individual.

The lesson for us is to utilize nuclear family or kin related members as socialization agents in matters concerning occupational choice, training, and career development. This process involves assessment of existing talents of family members of the nuclear family or kin group to work with the vocational education system in occupational choice, placement, and career development.

The social and physical environment is not, however, the sole determinant of individual development; innate differences must be recognized. Each person has specific genetic endowments and unique degrees of dexterity, intellectual potential, and sensitivity. Each family creates its own sub-culture of norms, values, and the like; and a bright child with innate capabilities can be stunted and fail to achieve his potential under the influence of a negative sub-culture. On the other hand, an individual with lesser abilities within a bountiful and nourishing setting has a boundary beyond which he cannot rise. The point is that each individual is a particular product of 1) genetic endowments, 2) environment, and 3) unique experience.

Elsewhere, I have documented the on-going ties of children and parents even after the children have become adults and left home to found their own families.[30] However, the strength of the kin network does vary, the effects of poverty upon the family are unmistakable. An example is the Negro matriarchal society in which the notion that the Negro boy belongs at work, not in school, is reinforced in part by the fact that educated Negro males did not have a consistent employment advantage over uneducated Negro males. Although this problem is receiving increasing attention, it is still evident that the process of racial discrimination tends to categorize job levels according to appropriateness for certain races. Thus, many Negro males withdraw as husbands, fathers, and workers -- reflecting the effect of attitudes and life situations upon marriage and feelings about illegitimacy.[31]

It is a well-supported view that the conditions in the Negro family are of long standing, result primarily from poverty, and will be corrected most effectively by improving the economic and social status of Negro men. As Herzog notes, whether one holds that the breakdown of the Negro family is the cause of social and economic problems or whether one believes that low social and economic status results in the deterioration of the family, in the long run, what families essentially need are good jobs for Negro men -- jobs with status, potential, and stability.[32]

The issue of potential is closely linked with certain key questions about vocational training. Some critics of the program urge that better qualified Negroes be advised not to take vocational education programs because the programs carry connotations of "dumping ground" and "inferiority"; these critics feel that a vocational training background would be a detriment rather than a boost to job-seeking Negroes. A related attack is that vocational trainees are doomed to a static position in the occupational hierarchy. Even though they may find jobs more substantial than those obtainable before training, individuals still lack the skills derived only from more general education which are essential for higher level employment. While this view indeed contains much fact, it still omits several pertinent considerations, namely, "second" and "new" careers. One possible way of broadening the potential of vocational education, as already cited, is to update the curricula in line with community needs. In this context, we suggest that the concept of "new careers" might be quite fruitfully utilized.

NEW CAREERS

The new careers theory proposes that all human service occupations can be broken down and reorganized to provide a more efficient product while allowing untrained people to play a productive role in entry service positions. Poor people would be trained for highly skilled and professional tasks which need to be done, utilizing those socially useful skills and capacities which many have acquired by having lived in poverty. This approach, an especially effective antipoverty strategy, requires a reorganization and redefinition of jobs for the professional and nonprofessional.[33] With comprehensive planning, vocational education might play a significant role in such reorganization and offer training programs for certain new positions. Most certainly, vocational counselors should keep informed of new careers developments in order to pass on such information to students.

At first glance it may appear that new careers, with leanings toward professionalism, might entail more literary and verbal skills than vocational students traditionally possess. However, it is imperative to note that the social sciences and service occupations have recognized that grave communication and value gaps frequently exist between workers and clients which mar the treatment process. In social work, for example, workers engulfed by middle-class values and biases, view lower-class clients as neurotic, difficult or even stupid. The clients, in turn, easily become disillusioned with the bureaucratic system, which they view as irrelevant and unsympathetic to their immediate needs. Yet, a worker who comes from a disadvantaged background might understand clients' fears and needs more readily, explain the "system" more effectively to the client, and contribute fresh insights to the treatment. This is but one instance of how people, deficient in more formal verbal skills such as grammar or spelling and lacking "higher" education, can with training in certain service-type roles, function with a high degree of productivity.

SECOND CAREERS

Of further relevance to vocational education is the concept of "second careers."[34] This concept refers to those who have trained or worked long enough in one occupational area to constitute commitment to a career, but who then drop this first endeavor and inaugurate a second career. Usually, women whose children have grown; persons whose first job was by nature short-spanned such as army careerists or sports participants; and individuals who found their first occupation unsatisfying are likely candidates for a second career. Further, quite frequently such persons are searching for emotional rather than monetary reward; thus, service-oriented occupations are prime possibilities. What the increasing phenomenon of second careers means for vocational education students is that career choice is not irreversible. For those who have more ambitious goals or who lack clearly defined goals, but for whom vocational education is, at the moment, the most viable path, the spread of second careers indicates that later entrance into a different field is neither impossible nor uncommon. Indeed, the first work endeavor may be a pathway into the second -- through solidifying likes or dislikes, through recognizing potentialities, or through acquiring skills that are transferable to an area more consonant with developing interests. This perspective is most congruent with the fact of ongoing technological change and the consequent need for men to view themselves in a flexible and dynamic rather than static light.

THE FUTURE REALMS OF WORK AND LEISURE

Thus far, focus has been turned to perspectives on work through history including contemporary views on the meaning and function of work, and problems in the vocational education area such as adequacy and image. Also included have been suggestions pertaining to the direction and image of vocational education; consideration of the issue of dirty work, the effects of poverty, the concepts of new and second careers, the influence of the family kinship system and statement of research needs.

One issue rendered conspicuous by its absence in the discussion thus far is that of alienation. Since Marx used the term "alienated labor," volumes have been written on this topic, and "alienation" now bears a variety of meanings, not always altogether consistent. Mainly due to industrialization, Western civilization has a certain set of characteristics which set it apart from other areas. As Lewis Mumford writes:

> The regularization of time, the increase in mechanical power, the multiplication of goods, the contraction of time and space, the standardization of performance and product, the transfer of skill to automata, and the increase of collective interdependence . . . are the chief characteristics of our machine civilization.[35]

In one sense it would appear that vocational education, which essentially prepares men to fit into a mechanical and bureaucratic system, must answer to the attack that by emphasis on preparation for specific task performance it is preparing individuals for the "alienated life," for roles of cogs in a mechanistic machine.

In view of the wide spectrum of interpretations, no doubt many workers are to some degree alienated, but then so also are housewives, executives, professors, and other professionals. The problems of meaningfulness, action versus manipulation, and estrangement from self, others and nature -- are not confined to the realms of economics and labor. Although these problems are too broad for full consideration here, they do have bearing on planning for the future.

Earlier discussion focused on some meanings and functions work does have; it was seen that for many working was preferable to not-working, despite financial necessity. This value of work per se, however, is not universally shared. But regardless of what other satisfactions and dissatisfactions are involved, vocational education serves an important function in preparing men for the very fundamental task of making a living. Fulfillment of the basic necessities of existence -- food, clothing, and shelter, is the first priority. In this society, there are tangental needs for purposeful involvement, status and prestige, which are bound with occupation, and which must be considered as second priorities.

In a society as abundant as ours, there are means to provide all citizens with the primary necessities; the failure to accomplish this is related, in part, to the complexity of the system, the endless redtape of bureaucracy, and the lingering Puritanical ideology that men must work in order to eat -- even in face of the fact that rapid technological changes make working dependent on skills many men cannot afford to acquire.

Moreover, as some have already realized, planning for the future must encompass the realm of leisure[36] as well as work. The problem then arises that men alienated in work -- to the extent they are also "estranged from life" -- are further alienated in leisure. Furthermore, as Margaret Mead commented, society does not really "approve" of leisure, work still being the dominant ethos.[37] Society tends to segment people according to whether or not they earn their own living, i.e., groups such as children, the aged, or the unemployed are not considered full citizens. Further, distinctions such as "sub"-professional indicate a lesser involvement in the affairs of the nation. These are particularly unfortunate and inappropriate stereotypes in light of the fact that increasingly more and more persons will have shorter work weeks, more free and leisure time at their disposal. The picture darkens as one recalls, for one example, the Morse and Weiss study of the function and meaning of work in which it was shown that:

> The typical employed man does not at present have alternative ways of directing his energy and internal resources and does not at present have alternative ways of gaining a sense of relationship to this society which are sufficiently important to take the place of working.[38]

Undoubtedly, as writers on alienation stress, the absence of such alternatives is due in part to what work has become as a consequence of industrialization, bureaucratinization, and automation. Man, once attuned to routine and the machine, has difficulty filling up unstructured time with anything other than more routine, more "busy" processes, or passive excitations induced by the mechanical media. Moreover, man as consumer functions under the ideology that he works in order to gain money with which he can then buy status and in a sense meaning itself. Arendt warns that the modern age, which began with such a promising outburst of activity, "may end in the deadliest, most sterile passivity history has ever known."[39]

To conclude, in order to deal with the future we must have firm grasp of the origins and present meanings and functions of work. In a sense we must have a foothold in two different worlds. Some consider work today to be alienative and manipulative in content; yet, it is also the criterion by which man's degree of participation in society is defined and measured. The world of the future, however, promises less work and more leisure, and the present patterns of thinking and acting are not attuned to such change.

Vocational education is thus caught between these two worlds. In helping men to prepare for work and participation in society, it serves a most needed function; and for many it presents, despite its drawbacks, a channel out of poverty. Yet, to maximize its potential certain changes are imperative, for example, curricula must be brought up-to-date with the advance of technology and manpower demands. Also, providing familiarization with clusters of job skills rather than specific job tasks -- too easily out-dated -- appears the best course. The concept of new careers, which, in suggesting a reorganization and revitalization of the service occupations including the active participation of the disadvantaged, is a promising anti-poverty strategy; and the second career phenomenon which indicates that more and more persons are leaving a first occupation to prepare for and enter another, are both relevant to the tasks at hand. A quite useful strategy might be for vocational education to plug its own energies into the new careers program -- not only to involve many individuals in jobs where skills gained-in-poverty might be put to rewarding use but also to aid in alleviating the tremendous manpower shortages now plaguing the service professions. Further, more investigation of the concept of "dirty work" needs to be undertaken to determine whether the public image of some occupations might be uplifted through stress on performing a necessary service for society, versus performing a "dirty" task because of the lack of other skills. How "dirty work" occupations may use their deviant posture in wresting power and privilege from the "clean hands" occupations is another possibility certainly a researchable problem. The influence of the family kinship system upon the work realm, and career choice in particular, is an area demanding further analysis; the family and its member units of the kinship system exert greater force than has generally been recognized, and attention to this institution can yield fresh insights.

For the world of increased leisure, vocational education, as it now stands, appears ill-equipped as a relevant preparatory source. It may be that, as some authors contend, meaningful use of leisure necessitates a particular skill. Such skill is more likely possessed by a man who feels in control of his own world, than a man manipulated by it. Although it is difficult to confront both the problem of full employment for all and the problem of full participation for all, such is the contemporary challenge. Our primary task is to provide unemployed youth and adults who want and need to work with training and jobs; poverty and unemployment is a destructive cycle, for both the poor and society. But at the same time we must begin to sharply scrutinize our own values and attitudes towards work and citizenship. We must labor to find a way to recognize the inherent dignity of all men, to make our world and its facets of work and leisure amenable to the full participation of every man, to recognize each man's task as a worthy contribution to the whole.

FOOTNOTES

[1] Adriano Tilgher, "Work Through the Ages," in Man, Work, and Society, edited by Sigmund Nosow and William H. Form, New York: Basic Books, 1962, p. 11.

[2] Hannah Arendt, The Human Condition, Garden City, New York: Doubleday Anchor Books, 1958, pp. 15-16.

[3] Tilgher, op. cit., pp. 12-13.

[4] Ibid., p. 20.

[5] Ibid., p. 24.

[6] Arendt, op. cit., p. 76.

[7] Ibid., p. 88.

[8] Ibid., p. 101.

[9] E. A. Friedman and R. J. Havighurst, "Work and Retirement," in Nosow and Form, op. cit., pp. 41-55.

[10] Nancy Morse and R. S. Weiss, "The Function and Meaning of Work and the Job," in Nosow and Form, op. cit., pp. 29-34.

[11] Robert Dubin, "Industrial Workers' Worlds: A Study of the 'Central Life Interests,'" Social Problems, Vol. 3, No. 3 (January, 1956), p. 139.

[12] Warner Bloomberg, Jr., "Gary's Industrial Workers as Full Citizens," Commentary, 18 (July, 1954), p. 203.

[13] Jacob J. Kaufman, Carl J. Schaefer, Morgan V. Lewis, David W. Stevens, and Elaine W. House, The Role of the Secondary Schools in the Preparation of Youth for Employment, The Pennsylvania State University, University Park, Pa.: Institute for Research on Human Resources, 1967.

[14] James W. Altman, "A Behavioral View of Vocational-Technical Education," paper prepared for the Commonwealth of Massachusetts Advisory Council on Education, Symposium on Vocational-Technical Education: Prospectus for Change, Boston, November, 1967.

[15] Richard A. Gibboney, "The Social Context and Vocational Education -- Congruence or Divergence?" paper prepared for the Commonwealth of Massachusetts Advisory Council on Education, Symposium on Vocational-Technical Education: Prospectus for Change, Boston, November, 1967.

[16] Sar A. Levitan, Vocational Education and Federal Policy, Kalamazoo, Michigan: The W. E. Upjohn Institute for Employment Research, 1963.

[17] Ivar Berg, "Manpower Analysis and Vocational Education: Problems and Perspectives," paper prepared for the Commonwealth of Massachusetts Advisory Council on Education, Symposium on Vocational-Technical Education: Prospectus for Change, Boston, November, 1967.

[18] S. M. Miller, "Comment: The Credential Society," Trans-action, Vol. 5 No. 2 (Dec., 1967) p. 2.

[19] "Training the Hard-Core Unemployed: A Demonstration Project at Virginia State College, Norfolk Division," Cooperative Research Monograph No. 13, U. S. Department of Health, Education, and Welfare, Washington, D. C.: U. S. Government Printing Office, 1964.

[20] But, just how to keep such a young person in school, how to hold him until the essential credential is attained, is another problem. As Berg noted, there is need for more attention to actual program content, to curricula which have "holding" power. Berg, op. cit. And beyond this specific problem, lies a deeper root issue to be faced -- the question raised by Bowman as to what are the fundamental reasons for desiring to prevent drop-outs; this essentially entails further clarification of social ends. Mary Jean Bowman, "Decisions for Vocational Education: An Economist's View," paper prepared for the Commonwealth of Massachusetts Advisory Council on Education, Symposium on Vocational-Technical Education: Prospectus for Change, Boston, November, 1967.

[21] Robert Pruger and Harry Specht, "Working with Organizations to Develop 'New Careers' Programs," Walnut Creek, California: Contra Costa Council of Community Services , 1966.

[22] Kaufman, et. al., op. cit.

[23] Marvin B. Sussman, "Occupational Sociology and Rehabilitation," in Sociology and Rehabilitation, edited by Marvin B. Sussman, Washington, D. C.: American Sociological Association, 1965, pp. 179-222.

[24] M. Lefton and W. R. Rosengren, "Organizations and Clients: Lateral and Longitudinal Dimensions," American Sociological Review, 31 December, 1966, pp. 802-810; this paper contains approximately 50 references on this problem.

[25] See August B. Hollingshead, Two Factor Index of Social Position, New Haven, Conn.: mimeographed, 1957.

[26] Professions Project, Working Memorandum No. 13, Cleveland, Ohio: Case Western Reserve University, unpublished, 1967.

[27] See, for example, Marvin B. Sussman, "A View of Needed Family Research in 1967," a document prepared for the Russell Sage Foundation, March, 1967.

[28] Ernest L. Minelli and Thomas M. Benton, "But Readjust We Must -- A Paper Directed at Change in Teacher Education," prepared for the Commonwealth of Massachusetts Advisory Council on Education, Symposium on Vocational-Technical Education: Prospectus for Change, Boston, November, 1967.

[29] Bowman, op. cit.

[30] Marvin B. Sussman, "Relationships of Adult Children with their Parents in the United States," in Family, Intergenerational Relationships and Social Structure, ed. by Ethel Shanas and Gordon Streib, Englewood Cliffs, New Jersey: Prentice-Hall, 1965, pp. 261-268; "Parental Aid to Married Children: Implications for Family Functioning," with Lee G. Burchinal, Marriage and Family Living (November, 1962), pp. 320-332; and "Activity Patterns of Post-Parental Couples and Their Relationship to Family Continuity," Marriage and Family Living (November, 1955) pp. 338-341.

[31] Mark Battle, "The Negro Matriarchy," The American Child, Vol. 47, No. 3, (May, 1965), pp. 8-10.

[32] Elizabeth Herzog, "Is there a 'Breakdown' of the Negro Family?" Social Work (January, 1966).

[33] Frank Riessman, "The New Careers Concept," American Child, Vol. 49, No. 1 (Winter, 1967), pp. 2-8.

[34] For comprehensive discussion of this concept, see Marie R. Haug and Marvin B. Sussman, "The Second Career-Variant of a Sociological Concept," Journal of Gerontology, Vol. 22, No. 4, Part 1 (October, 1967), pp. 439-444.

[35] Lewis Mumford, "The Mechanical Routine," in Man Alone, ed. by Eric and Mary Josephson, New York: Dell Publishing Company, Inc., 1962, p. 120.

[36] A quite penetrating discussion of work and leisure is presented by Sebastian de Grazia, Of Time, Work and Leisure, New York: The Twentieth Century Fund, 1962.

[37] Margaret Mead, "The Changing Cultural Patterns of Work and Leisure," one report in a series of Seminars on Manpower Policy and Program, Washington, D. C.: U. S. Department of Labor, Manpower Administration, 1967.

[38] Morse and Weiss, op. cit., p. 30.

[39] Arendt, op. cit., p. 295.

Neal Gross*

REACTION

One of the basic purposes of this conference is to explore the utility of the perspectives and research findings of the social sciences for the difficult and complex task of designing and implementing plans for the improvement of vocational and technical education in Massachusetts. Professor Sussman's provocative paper presents a number of sociological ideas and research findings that should be extremely useful in deliberations about the future of vocational-technical education in the Commonwealth.

Of special value, in my judgment, are his observations about the influence of the family on occupational decisions, the role vocational education could play in developing, and offering training for, "new positions" in our society, and the need to make students aware of alternatives available to them at both early and later stages of their occupational careers. His paper offers a number of concrete suggestions that appear to be worthy of serious consideration in attempting to fashion vocational educational programs that will provide students with a more realistic understanding of the complex world of work to which they will be exposed and give them the job skills that they will need to cope effectively with it. I am quite certain that Professor Sussman would agree that efforts to implement the kinds of suggestions he has proposed need to be subjected to rigorous evaluation in view of the slight payoff that has resulted from so many programs instituted in recent years designed to solve major educational and social problems in our society. Implicit in Professor Sussman's paper is the central perspective of the sociologist when he examines school systems. Since I believe this general orientation of the sociologist is the most valuable contribution he can offer to educational planners, I wish to make it explicit. I then propose to consider its possible implications for re-orienting our thinking about the scope and nature of vocational education in our schools.

In sociological perspective, school systems are sub-systems of a society designed to fulfill certain of its basic needs. That is, the sociologist does not view schools as operating in a vacuum but rather as the major formal agency of socialization of a society, one in which it invests heavily to fulfill its needs. The school's "output" constitutes "in-puts" for the society.

I believe that such an orientation to schools is of great value to educational planners and decision makers in the United States because it forces them to ask a fundamental question that they too frequently ignore. It is this: Is the mission of the school today and in the coming decades the same as it was in the 1920's or the 1940's? I think the answer is clearly "no." In the past the essential task our society assigned to the schools was to sort and allocate students on the basis of a set of arbitrary academic criteria.

But today, public education has been

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called upon to play a new, vital, and strategic role: to maximize the human resources of our nation. The theme for this new challenge was, in my judgment, most eloquently laid down in 1963 by the late President Kennedy in his message to the 88th Congress:

> For the nation, increasing the quality and availability of education is vital to both our national security and our democratic well-being. A free nation can rise no higher than the standard of excellence set in its schools and colleges. Ignorance and illiteracy, unskilled workers and school dropouts -- these and other failures of our educational system breed failures in our social and economic system: delinquency, unemployment, chronic dependence, a waste of human resources, a loss of productive power and purchasing power and an increase in tax-supported benefits . . . Failure to improve educational performance is thus not only poor social policy, it is poor economics.

Education is no longer thought of as basically a mechanism for sorting out the academically weak from those who are academically strong -- regardless of the handicaps students bring to the academic race. It is no longer viewed as an institution largely isolated from other major institutions of our society. It no longer serves as a device to preserve the status quo and the long-standing inequities and deprivations to which we have subjected so many of our citizens.

The schools are being asked to serve as a dynamic instrument of social change; they are being asked to play a vital role in giving substance to the words in the preamble of our Constitution and assuring that the largesse and abundance of our nation is distributed to its citizens in a more equitable manner. Yet only a small number of school boards, school executives, and teachers in the Commonwealth, in my judgment, have accepted this new role for the schools.

In this technological and complicated age, and in a society whose conscience has been sorely pricked by the way we have ignored our disadvantaged citizens, our national leadership has been forced to look at the raw and dirty facts in our cities and our rural ghettoes and has finally become aware of an elementary sociological fact: there are complicated linkages and threads among our major social institutions. The family, the schools, and the economic and social fabric are not isolated phenomena but are interrelated phenomena. We are finally beginning to take seriously that socio-economic forces are nation-wide in scope and are not restricted to local communities or the boundaries of states. We have finally recognized the following political, economic, and social realities: that local communities and states vary in their willingness, effort, and financial ability to cope with their economic and social problems; that most state legislatures have been unable or unwilling to deal with critical problems of cities; that our nation is characterized by constant and huge movements of population; that the problems of cities and our citizens are influenced by many social forces over which they have little direct control; and that our affluent society has swept under the carpet for too long one of its most critical social problems -- its wastage of human resources. And the schools are now being asked to make a systematic and sustained effort to do their part in solving it -- a lion's share of the job.

What is the implication of this sociological perspective about the linkage between the schools and their society for those responsible for educational planning in the area of vocational education? I believe it implies that vocational education needs to be perceived as part and parcel of the larger problem of maximizing our human resources. Instead of focusing on how vocational courses can be improved, educational planners may need to focus on the more fundamental question: What steps need to be taken to maximize the productivity of schools as people-processing organizations? What needs to be done to maximize their human resource output for the welfare of our society and for the students, themselves?

A sociological posture to vocational education raises the following kinds of basic issues:

1. Is not education for vocation a problem that besets all students -- not simply those who will not go on to college?

2. If a basic goal of the school is to maximize human resources, then should we not shift our thinking from how to improve existing structural arrangements in the schools to what are the basic tasks schools need to perform in order to maximize the potentialities of their students and what organizational and structural arrangements, including entirely new ones, offer greatest promise of accomplishing them. Attention needs to be directed to the new mission of the schools and to creative ways to achieve them -- not to existing programs and how to improve them. The concept of organizational lag may be useful here.

3. Should not educational planners attempt to dislodge the present conceptions of vocational education held by superintendents, school boards, and the education profession generally -- and substitute for it a new concept -- education for students who will occupy many roles, one of the most important of which will be their vocations?

4. To get across this expanded and realistic conception of education for occupations is, in my judgment, the priority task in educational planning for vocational education. When this is done, the groundwork will be laid to think rationally and meaningfully about the linkages between educational arrangements and processes and the vocational and other needs of our students and their society. Only then will we be able to lay to rest the myth that there is a neat and arbitrary dividing line between vocational and other types of education.

ECONOMICS

Mary Jean Bowman*

DECISIONS FOR VOCATIONAL EDUCATION: AN ECONOMIST'S VIEW

THE KINDS OF THINGS ECONOMISTS HAVE TO SAY

A devoted public servant who was sincerely concerned with improvement in the training and opportunities provided for American youth, and especially for those who will not go beyond high school graduation or, at the most, junior college, said recently to one of my colleagues: "Don't worry about what it costs; just tell us what to do and we'll do it." The reply ran in this vein: "All right, let's provide every school with a staff of creative teaching geniuses deeply committed to their work and to children and youth, let's give these teachers unlimited funds for classroom, library, lab and workshop equipment, and let's complement all this with a large supporting cast of health personnel, home visitors, big brothers and sisters, and psychiatrists." Such a utopian program should certainly have some startling effects -- though a sociologist might well point out that the effects even with all of this would be disappointing unless we simultaneously waved a wand over our cities to remake them -- and heaven knows what else. Moreover, my economist friend might well have gone on to point out that even when we have "taken care of" both school and home, we have the question of what should be done about the labor market. However, he had said quite enough to make his point -- there are resource limitations that have to be faced up to. Note also that in his utopia he evaded curriculum questions, and in general, so far as internal educational decisions are concerned, he passed the buck to the teaching geniuses and their supporting casts. Economists are not experts with respect to internal educational decisions -- far from it. What, then, do they have to say concerning "vocational preparation?"

First of all, and most fundamentally, economics is the science of decision-making. The economist begins with a way of thinking that focusses upon the processes of deciding among alternatives. This is an analytical method or set of methods that is quite independent of the substantive facts and issues. In the present context, we can sum up that method as having two main variants: benefit/cost analysis and analysis of cost-effectiveness. The former applies when the benefits are measureable in units that can be compared with the costs. The second starts with delineation of certain benefits, measureable or not, and specifies a way of determining the most efficient combinations of resource inputs and processes for realization of those benefits. I shall make formal or informal use of these two analytical approaches repeatedly in the pages that follow.

Secondly, the economist has certain kinds of pertinent substantive information that come from the particular empirical problems to which he has directed attention. He may have looked especially, for example, into the components of schooling costs, how large they are, and who pays them in what ways. If he is interested in the "economics of education," he will presumably have looked into earnings differentials associated with differentials in schooling. Economists are increasingly exploring questions concerning labor substitutabilities and occupational mobility, although the unitiated should be warned that untested presuppositions frequently intrude into economists' pronouncements in popular publications on these matters. Economists have become increasingly concerned also with the conditions that encourage or discourage expansion of training within industry. They can even come up with a few important and very specific recommendations about school curricula.

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Unfortunately, however, economists are all too often asked to give answers of a kind that either lie outside of their competence or that would run counter to the facts of economic life -- answers of a kind that are sought only because of misconceptions of what the economy is like. More serious, too many economists, seduced by the popular demand for cook-book replies, try to comply; when they are not just poor economists, this is outright irresponsibility.[1] If the economist is to bring his more basic professional expertise to bear upon the concrete problems with which an educational decision-maker must deal, he must work side by side with the latter. Only then can he apply to the more detailed decisions the basic expertise that is at the core of his discipline -- his knowledge of the complex interrelationships that characterize an economic system (for better or worse), and his analytical apparatus for arriving at decisions among alternatives.

Analytical decision-making has several prerequisites. 1) Ends or goals must be clearly specified, and where the fuller realization of one goal conflicts with another priorities must be stipulated: how much is a given addition to one sort of benefit worth in terms of what we would be willing to sacrifice of another? The economist can contribute to the assessment of how far some public or societal goals do in fact conflict with others, but he does not set the priorities; that is the prerogative of his clients, be they administrators, legislators, or the general public.[2] 2) Resource availabilities and the degrees of elasticity or flexibility in those availabilities must be assessed as far as possible. 3) The effects of different combinations of resource "inputs" on results must be examined. The results do not have to have a price tag, by the way; they could be increments in capabilities or tested "achievements." 4) In any pragmatic decision-making situation the manoeuverable variables must be identified. Putting this in a negative form, decisions on policies and programs are always subject to constraints that are not inherent in resource limitations. Here we come full circle to competing ends again -- whether latent or manifest, concealed in inertia and resistance to change or clearly formulated and explicitly justified. In practice we never explicitly set out all the constraints, but only those of which we are conscious, which often means those that are in some degree open to question. More such questioning, or challenge if you will, would widen the range of available alternatives and open the door to more creative and innovative decision-making. This is why the economist who makes too great an effort to be a "political realist" may do himself and society a serious disservice. Ensuring that the economist would not impose his own assumptions about political constraints was undoubtedly what lay behind the plea quoted at the beginning of this paper: "Don't worry about what it costs; just tell us what to do and we'll do it."

Evidently, no decision-maker can take all effects of a given choice into account, let alone all possible alternatives. Even at the broader policy-making levels, decisions will and must be made on the basis of a limited number of considerations. The scope of alternatives examined in arriving at more specific decisions for the implementations of policies are then in turn circumscribed by the policy framework, though they may also exercise a feed-back effect on the policy positions. In the pages that follow I shall be weaving back and forth between the broader policy and the program decision levels. However, this is no place in which to elaborate upon the general functioning of an economy.[3]

Discussion of the economist's potential contribution to decisions about vocational education is organized around the following topics:

1. Monetary benefit/cost assessments of vocational schooling (pages 6-13
2. The reduction of drop-out rates viewed as end or as means (pages 13-16)
3. Human resource production functions and human resource formation at school or at work (pages 12-24)
4. The manpower forecaster and decisions for vocational education (page 24)

These discussions are followed by brief concluding remarks. Cost/benefit analyses of MDTA and related programs are not discussed, though there have been a number of interesting and fruitful attempts at such assessment.[4] I justify this omission not only because of limitations on the desireable length of this paper, but also because I do not regard these activities as tenable substitutes for vocational training in the regular secondary school programs. On the other hand, questions as to what should be done in schools before entry into the labor force, and what is best done later on or in close association with the job are among the key issues for a policy-maker who is concerned with vocational training at the secondary and junior college levels.[5]

MONETARY BENEFIT/COST ASSESSMENTS OF VOCATIONAL SCHOOLING

Neither economic problems nor the methods of economic analysis are confined to assessments in money terms, despite the propensities of non-economists to identify "economic" with "monetary," and the prevalence of money measures in much if not most empirical economic research. We could define the "value added" by a given year in school by units gained in achievement or even, if that is our purpose, by the distance moved along a particular attitude scale. We might, and for some purposes should, measure at least some inputs in time units, possibly putting bigger weights on some kinds of time units than on others (student time inputs might even be weighted more heavily than teacher time!) However, as soon as we try to both add up input units and express outputs in units that can be compared with the input units, the essence of benefit/cost comparisons, we need some common measure. Money valuations, including money valuations of student time, serve such a function.[6]

Conventional social benefit/cost assessments take as the goal maximization of national product. The method used by economists in making such assessments of vocational schooling, as of any other investment, has three main parts.

First, total costs of training are estimated. These costs include (a) direct money outlays for current expenses and estimates of capital costs, and (b) the imputed value of student time, measured by the earnings students forego in attending school instead of working. In social assessments it is assumed that these foregone earnings are in turn a good measure of what the student would have produced, and they are thus measures not only of costs to an individual but also of what society foregoes. Student incomes foregone make up well over half of the total costs of resources going into schooling for secondary school students in general.[7] However, technical-vocational schools entail considerably higher direct outlays than do general or commercial schools. With the higher direct costs, total costs of technical-vocational schools per pupil-year will be higher, unless we assume that technical school youth would earn considerably less were they to enter the labor market than students in other types of secondary curricula. In fact students in the technical-vocational schools are apparently no less able on the average than other terminal secondary school students and it would be fallacious to suppose that their foregone earnings are lower.[8] Although there can be plenty of argument over just what cost figure to put on student foregone earnings, the magnitude of error in this estimate is far less than in the available estimates of either returns or costs of capital and equipment. Furthermore, the problem of measuring students foregone earnings can be evaded altogether if we concern ourselves only with the differences among costs of various curricula (as vocational-technical, general, and commercial secondary schooling), provided we are willing to accept the hypothesis that the potential foregone earnings of students in these various curricula are substantially the same.

The second part of a social benefit/cost assessment again assumes that earnings measure productivity. It requires estimation of the future earnings streams associated with completion of, say, a technical-vocational course as against the life earnings streams of those leaving school at the end of junior high school or, in a direct comparison among alternative secondary school curricula, as against those entering the labor market upon completion of commercial or general curricula. The stream of differences between any two of these average earnings streams gives us a measure of the time flow of advantages of one alternative over the other when costs are not yet taken into account. I shall come back to some of the problems of empirically identifying these streams of earnings differentials. For the moment, let us make the optimistic assumption that we have good estimates.

The third step in a conventional benefit/cost assessment requires a method for comparing a future flow of earnings with the cumulated costs of the schooling to which it is attributed. We might just add up these annual returns, regardless of when they occur. However, an income expected in the distant future is not worth as much as the same amount of money today. This is not just a matter of subjective time preferences; if we had the money today we could invest it and let the interest accumulate. One way of turning the expected extra earnings stream into a figure that we can compare with its costs is therefore to discount the successive earnings differentials at the rate of interest that could presumably be obtained on invested funds before adding them up. We compare this sum of discounted earnings differences with the differential costs and see which is the greater, by how much. Suppose we regard an eight percent interest rate as a reasonable standard for discounting. The technical-vocational school curriculum will then be "better" than the commercial curriculum if the stream of earnings differentials for technical over commercial students discounted at eight percent exceeds the extra costs of the technical schooling. Usually economists use several alternative discount rates to see how these affect the comparison. Using a higher or lower discount rate can reverse our conclusions; the rate at which the benefits and costs come out even is then the "internal rate of return" (the rate at which the benefit/cost ratio is 1). If the internal rate of return is high relative to returns on other investments, the extra investment in technical-vocational schooling will be a good alternative.

In the very limited empirical estimates brought together to date this is not the case, however. Though technical school students may earn higher starting wages than the graduates of general or commercial high schools, it seems that their advantage does not compensate for the higher total costs of their schooling except at extremely low interest rates.[9]

Does this mean that we should do away with technical vocational schooling, as the findings to date would seem to imply? There are several reasons why we cannot put any such weight on them.

Even if we were to regard a correct benefit/cost assessment of miscellaneous existing technical-school programs taken together as sufficient evidence, the studies to date could not meet the test. These pilot studies break new ground, but the samples are small and findings certainly cannot be generalized with any sort of assurance. There are uncontrolled biases in the social background and ability selectivity of students in most of them, biases that could distort results in either direction. Still more serious, the earnings data are limited to the first year or very early years after entry into the labor market. Where the researcher has taken the third step outlines above, to fill out his assessment by discounting estimated streams of earnings differentials, early-year differentials have been carried forward, by assumption, to a cut-off point at five or at ten years, beyond which they are ignored (a tacit assumption that beyond that point the two gross earnings streams have converged so that the difference between them is zero). If there were reason to suppose that earnings of technical-vocational graduates would continue to be above those of other secondary school graduates throughout or far into their working lives, the cut-off at ten or less years out of school could seriously bias results against the vocational-technical school unless we were discounting at extremely high interest rates. However, there are a number of a'priori reasons for believing that when we control for ability the earnings streams of terminal general and those of trade and technical school graduates are in fact likely to converge or even to cross. Such direct evidence as we have supports these inferences.[10] Youth who enter the labor market directly from the more academic non-vocational secondary-school curricula receive more on-the-job training during their first years at work and are paid lower wages during that period. In the end, however, they accumulate more total education and as much or more earning power. If this is generally the situation, it appears that the advantage of the male technical-vocational graduates (as compared with either the general academic or the commercial course graduates) is a temporary one, and the extra costs of technical training must be recouped, if at all, over a short time span. Protagonists of technical-vocational education cannot find much solace in this.

The educator may well challenge the economist to go further, however. A much more meaningful and fruitful application of benefit/cost analysis would discriminate among the diverse trades and "occupations" for which youth are trained and, more sharply, among curricular variations within and cutting across these specialities. There has been some attempt to compare what happens to those trained as, say, electricians, and those trained as compositors in particular localities. But how far would results differ with particular labor market conditions? Variations in early-year earnings may be peculiarly sensitive to such conditions. As yet there has been no attempt to my knowledge to make benefit/cost assessments of curriculum variations: what are the effects, for example, of more mathematics or draftsmanship, less training in other shop work? Yet this is just the kind of question that might be of greatest interest in educational decisions.

Finally, schools have many other functions that I have thus far ignored or that elude our money measures. One of these functions is to act as a sifting agency, which serves prospective employers by sorting out youth with greater ability and motivation or with particular interests. If graduation from a trade course serves mainly as an entry ticket to apprenticeship in a restricted trade, we may be over-counting real productivity effects. But this could cut the other way also, as it will where union apprenticeship constraints delay receipt of wages matching productivity for a youth who had trade training before he left secondary school. So far as I can see, there is no reason to suppose any special bias for or against estimates of returns to technical schooling on this count, despite the fact that those who mention this factor seem to swing it into the balance against the technical curricula. More frequently cited as favoring trade and technical secondary courses is their presumed advantage in preventing drop-outs; this is worth special attention, and I shall come back to it in the next section.

Adding up the situation as of the present, there have been brave beginnings in benefit/cost valuations, but that is all. Thus far we have made only limited empirical applications of our theoretical arsenal; we have used blunt instruments on frail data. But crude as they may be, these pilot efforts point the way to bigger, better, and more pertinent research endeavors.

THE REDUCTION OF DROP-OUT RATES AS END OR AS MEANS

Just how far one or another kind of secondary school curriculum or other variation in school characteristics or special programs can counter the influences that produce high drop-out rates among some groups of young people in an era in which a larger and larger majority are not only completing high school but even going beyond that level is not at all clear. Furthermore, the answer to that question is not one that economists are particularly well qualified to give. What the economist can do is to make use of any available evidence on this score to make an economic assessment of costs and effects.

There are two quite different ways of looking at the effects of one or another program or type of secondary school on drop-out rates. We may estimate the effects of reduced drop-out rates on differential income streams, introducing these adjustments in a benefit/cost analysis that still takes maximization of national income as the goal. Alternatively, we may take prevention of drop-outs as an end in itself, and apply cost-effectiveness analysis to alternative ways of accomplishing this end.

The only empirical studies I have seen thus far took the first of these points of view. Though they have been very ingenious, empirical results remain unclear. One of these studies compared technical with other secondary streams in the schools of a New England town.[11] Using characteristics of pupils in the various streams and their drop-out rates as a base, the author predicted the drop-outs to be expected in the technical curriculum and compared this with the drop-out rates actually observed there. He came out with favorable results for the technical-vocational school in that drop-outs were less than the analysis predicted. Taking these data at face value, along with the rest of his figures for costs and differential income streams, I estimated that in this particular case the drop-out prevention had sufficient effect on estimated future average income streams to make the technical-vocational school a paying affair at interest rates in the neighborhood of 5-7 percent, whereas it had been a very bad economic bet otherwise. This conclusion rests on extremely shaky grounds, however, even for the particular case. It certainly cannot be generalized, and other estimators have been more pessimistic.

Let us suppose for the moment that the most optimistic of these will-o-the-wisp estimates, ingeniously woven out of the thinnest gossamer, happen to be correct and even generalizeable. Have we come to the end of the matter in finding that when we add drop-out prevention effects in estimating benefit/cost ratios for technical as against commercial or general schooling, the former can at least claim parity? Clearly this is not the case. Even if we stay with the national income maximization goal, we must ask: is there a more efficient way than this of preventing drop-outs? If there is, perhaps we should stick with general secondary schooling and put the resources saved from investment in expensive technical school equipment into the drop-out prevention program in another way? (I do not suggest that this is in fact the case. If I knew the answer to "the drop-out problem" and all that goes along with it, I would resign as an economist and take on a new job.)

Going a step further, we come to the point at which a stand must be taken concerning the priorities as between higher national income and fewer drop-outs, for in the present state of our knowledge one thing is certain: a program that would have major impact, pushing beyond anything that technical-vocational schooling *per se* can do, is going to run into increasingly tougher problems. Even the most efficient drop-out prevention programs will cost more per drop-out prevented as they dig further into the hard core of the poverty syndrome. In the short-run, at least, this is certainly going to soak up more of the society's resources than it will add to the productivity of those induced to stay in school.[12] Whether drop-out prevention is in fact the point on which we should focus may be questioned even if we regard a war on poverty as having priority over further increases in national income, and even if we define "poverty" in cultural rather than economic terms. But this is to raise the question, "What in fact is our reason for wishing to prevent drop-outs anyway?" and thus to call for further clarification of what our social ends really are.[13]

HUMAN RESOURCE PRODUCTION FUNCTIONS AND HUMAN RESOURCE FORMATION AT SCHOOL OR AT WORK

Thus far I have argued that while the economist has an analytical tool box that could be of value in application to critical educators' decision problems with respect to vocational schooling, as yet its empirical applications have been crude, and the data are quite insufficient to hold up the edifices that have been built upon them. Nevertheless, it is possible to come down to earth in a simplified formulation of some pragmatic cost-effectiveness questions that are of quite general relevance to specific educational policy decisions. I will illustrate by application to analysis of what is best done in school, what at work. In that context we must ask:

1. How widespread is the demand for a particular skill, in how great a range of jobs can it be applied, and how rapidly is it likely to obsolesce?
2. What are the characteristics of human learning processes and how is learning affected by the setting and conditions in which it is sought, or in which training is attempted? Motivations are of critical importance here. So is the nature of the human raw material, which varies substantially as among individuals and groups in a society.
3. What is the extent of foregone working time entailed on the part of the learner, and what is its value in one setting and with one timing of training and learning versus another?
4. What are the costs of time provided by instructors, and do instructors themselves become obsolescent more rapidly in one setting as against the other?
5. How do costs of equipment used for training compare in one alternative versus another, and how serious is the problem of obsolescence of equipment? Here we are concerned with both the intensity of use of expensive equipment and the importance (or unimportance) of its obsolescence for the learning process.
6. How far does training or learning on-the-job entail an extra cost because of interferences with the efficiency of other workers? This can be very important in particular instances but henceforth I will take it as read into the decision process without further comment.

These six questions provide a set of presumptive rules for the division of the human resource development task between school and job loci.

The presumption is clearly in favor of on-the-job training spread at intervals over a working life when the skills are of kinds that are learned quickly (once a man starts from some general basic knowledge of how to learn) and quickly become obsolescent or obsolete. The case against school training will be especially strong when expensive equipment that becomes obsolete is associated with skill obsolescence. Prima facie, under these circumstances there will be obsolescence in the skills of school instructors, whereas the foreman or trainer in industry must per force be comparatively up to date. Notice that the obsolescence that is relevant here is of a kind that the individual himself cannot counter; it is not the obsolescence of a doctor or a university professor who fails to keep up with new developments in his field.

This brings us to two other major considerations that can favor on-the-job or job-linked training. These are conditions that affect motivations to learn (whatever the skill may be) and the need to learn how to fit into and exercise supervisory roles in complex organizations. The latter refers primarily to social learning for line, not staff, functions (insofar as these can still be distinguished); there is no need to elaborate the importance of experience and participant-observation for such learning. Motivation factors, on the other hand, may be more important as they differ among people than among skills. The on-the-job potentials for enhancing motivations to learn may be especially important for many of the drop-out-prone, and thus, significantly, for many to whom MDTA and related programs have been primarily directed. We might hypothesize also that skills the acquisition of which entails attitude components of non-traditional and non-academic kinds would be more readily taught and learned in a job-linked training program. However, I am quite aware that this argument could easily be turned around, to specify that there should be more exposure in the schools to kinds of activity that contribute to the development of attitudes conducive to those kinds of learning -- whether in a "vocational" or a more general course of study. Obviously, as an economist I can only speculate on these aspects of the nature of human learning and the human raw material. What such speculation suggests to me is a much closer linkage between vocational schools and business enterprises as a way of pulling "problem youth" into the stream of both learning and working. This does not mean that schools should take over from business the training for specialized tasks in local firms, however. On the contrary, for some groups public subsidization of training within industry may be both less expensive and more effective than training inside of a school.[14] There is also a strong case for more use of "sandwich courses" not only in adult education but earlier. Perhaps there has been too much attention to "the drop-out problem" and too little to the fact that as more and more young people stay in school longer and longer their responsible participation in adult life is increasingly deferred. Perhaps, although it occurs later, some of the restlessness and frustration evident among university students has more in common with the high school drop-out's problems than we usually recognize. Economists often argue, very tidily, that the most efficient timing of investment in human resource formation is to continue full-time schooling to the termination of studies rather than to interrupt that schooling: this means both a longer pay-off period and lower foregone incomes than when part of the schooling is deferred. But even if we ignore obsolescence, to rest with these arguments is to neglect one of the critical questions that a more sophisticated application of economic theories should bring to the fore: what in fact are the human learning production functions, and how do these differ with differences in the human raw material? The motivational factor in human resource formation sets it apart from other kinds of investments. This is a factor we can ill afford to ignore.

By implication, I have already anticipated the most important functions of the schools in preparation for vocations; Schools are above all the place where youth must acquire the capabilities of widest and most general applicability; the schools have not done their job of vocational preparation if their graduates have not learned how to learn. This means training in the skills that extend capacities to shift roles with dynamic changes in labor market demands. The skills or the components of skills that have such generality do not become obsolete, and the earlier such learning can take place the better. The argument that foregone incomes will be less and the pay-off period will be longer is valid so long as motivation can be sustained and learning in fact takes place; only under very special circumstances is basic general education advantageously located in a work setting.[15] In fact the demands on our schools so far as generalized training is concerned have been constantly rising, to include, for example, much stronger offerings in mathematics and basic science even for those who will go directly from secondary school into the world of work. This is learning to do something "practical," let us make no mistake about it. At a conference on vocational education that I attended a year ago, one of the participants objected: "It would seem from this discussion that all a young man needed was to say to a potential employer 'I don't know anything, but I'm adaptable'." But this turns things upside down. What the job applicant with a sound general education can say is "I have the mastery of tools that will enable me to learn new jobs rapidly and to acquire ever growing competence through work experience." If he really has such training he knows *a lot*. The truth of this is evidenced by the facts that earnings of men with better general training rise more steeply through time, and such men receive more training on the job.

In stressing the primary and crucial role of schools, as agencies that teach men how to learn, I am not stating that this is the only thing they can properly do, higher professional training aside. If we take another look at the six questions with which I introduced this section, it becomes obvious that training in clerical skills, for example, is very properly located in the public schools. It is no accident that proprietorial schools are also especially important in this field. The gamut of stenographic, secretarial, bookkeeping and accounting skills, at all levels, are in wide demand across the economy, and there is no evidence that absolute demands are declining on account of automation. Equipment is relatively inexpensive and does not become obsolete. What *is* happening is that the level of performance expected is rising. But note once again that this rising level of demand refers not so much to the specialized aspects of training as to the basic underlying command of language and mathematics. Here we have a spiraling effect of the expansion and improvement of schooling upon demands for still more and better general education.

Where, then, do the technical and trade courses of study come in? And what are the implications of all this for curricular reform and related changes in their offerings? It seems clear, if we follow through with the previous lines of argument, that training in mathematics and applied science must have increasing priority for those capable of mastering these disciplines. Along with this goes the presumption that the training of junior technicians will be moved increasingly to the junior college level.[16] However, there are also some kinds of widely applicable skills that have as yet been little developed in technical secondary curricula, but that are readily learned by young teen-agers and clearly meet the condition that they have learning-to-learn attributes and do not rapidly obsolesce. The most striking example is probably elementary computer programming -- which may be taught quite as well in general as in technical curricula, by the way. Although the equipment required for such instruction is expensive and does indeed obsolesce, that obsolescence is not critical to the learning process. With expansion of the market, this is becoming increasingly an appropriate subject for instruction in some of the big city schools.

But what of training in the skilled trades, ranging from carpenters and welders to beauty parlor operatives and tailors? Many of these trades fit the specification that they are in wide demand and do not obsolesce to a degree that their practitioners cannot counter. To this extent, at least, schools may compete efficiently with other agencies in the provision of training. How far other factors might swing the balance I am in no position to guess, but one fact clearly commands our attention. For many of these trades there are proprietorial or union-sponsored training facilities that are patronized by both high school graduates and drop-outs. Which of the proprietorial schools or union apprenticeship programs may have special training advantages that could be identified in a cost-effectiveness analysis of their activities vis-a-vis those of public trade schools I do not know. In any case, whether they are high school drop-outs or graduates, students attending the proprietorial commercial and trade schools are frequently night students and among the less rather than the more able to pay their tuition fees. This raises the question: when would the most efficient and equitable alternative be to publicly sponsor teen-age students in proprietorial or union apprentice trade programs? When might an uninhibited economic choice lead us to suggest that a school establish, for example, its own beauty business for student customers (paying or not)? There is no reason why these and other programs could not co-exist. In fact, quite a few problems might be alleviated if we issued school coupons to adolescents in the age range from say, 15 to 18, allowing them to spend those coupons for "tuition" at either public or approved proprietary schools. When I first heard this system expounded, in a more sweeping version,[17] I was particularly critical of its implications at the lower ranges of the ability and/or motivation scales, but I have come virtually to reverse my position. I am not at all sure but that it would hold promise for the involvement of drop-out-prone youth in particular. It could modify the inequities in schooling costs for low-income youth that now characterize the mix of public and proprietorial establishments. It would certainly provide a greater measure of flexibility in adjustments of educational offerings to changes in demands for craft and service skills.

THE MANPOWER FORECASTER AND DECISIONS FOR VOCATIONAL EDUCATION

There can be no doubt that whatever else its effects may prove to be, the Vocational Education Act of 1963, hereafter called simply "the Act", has stirred up plenty of scurrying hither and thither among an expanding circle of manpower assessors. As participants in this conference are well aware, in order to receive its allotment of Federal funds a state must submit to the Commissioner of Education a plan insuring that local vocational education programs will be adapted in the light of ". . . information regarding current and projected manpower needs and job opportunities . . . ." The plan must also incorporate a cooperative arrangement with public employment offices to supply "occupational information regarding reasonable prospects of employment in the community and elsewhere" to state vocational education planners and local educational agencies concerned with these matters. Such information is to be used both for vocational guidance of students and to determine the occupations for which training will be offered. Vocational schools in turn are supposed to provide the Employment Service with information concerning numbers graduating and being trained for various occupations. Today, four years after passage of the Act, assessments of degree of conformance with its labor market information and inter-agency cooperation provisions are appearing.[18] To many the results are disappointing, whether or not surprising: cooperative agreements have been signed of course, but action under them is another matter. Moreover, even the best of the proliferating "Area Skill Surveys" are being criticized as unsuitable for translation into curriculum implications. Are these experiences attributable primarily to "obstinate traditions of independence and non-cooperation between schools and employment services," or inadequate "team spirit," as some assert? Are they simply the kinks and growing pains that we can expect in new programs and that will be smoothed out with time? Or are there some fundamental difficulties inherent in the whole way in which the Act, the roles of manpower assessors, and the kinds of information needed and alternatives to be considered in educational decision making are conceived? In my judgment there are such inherent difficulties. Many (not all) of them boil down to the too-sweeping assumptions of universal "inelasticities of factor substitution," and "inelasticities of demands" at refined levels of occupational classification, together with a narrowly "vocational" identification of a specified skill package and of the latter with an individual. This is an economist's way of saying quite a lot that cannot be elaborated here, but we can accomplish a good deal by starting more modestly and concretely, with the skill packages. How far does (and in educational policy-making we may ask how far should) the equation "individual =skill package = occupation" hold?

The distinction between analysis of "skill" versus of "occupational" supplies and demands is a critically important one. It has two partially independent facets: there is the problem of identification of just what the skill components of a particular "occupation" are and how stable they are from one place or time to another. There is also the question as to how far what is needed by educational planners is identification of skill demands that cut across occupations or of the skill combinations that go into particular occupations. The traditional stance of "vocational education", almost by definition, has been to look at occupations as the units for training, putting together the skill mixes that an "occupation" requires.[19] However, it is not at all clear how far this position should be maintained today, certain of the more traditional and less demanding trades aside. We may illuminate this second issue by taking a look at empirical evidence on the first.

The U.S. Employment Service has a long history of occupational research that has entailed careful analyses of skill mixes associated with various jobs; that analysis is used in the definitions given in successive issues of the Dictionary of Occupational Titles, and the Dictionary, in turn, is used in local Area Skill Surveys, in some of the more modest local labor-market studies associated with MDTA programs, and in national labor force surveys. This might suggest that my distinction between "occupations" and "skills" was a quibble so long as we stay with the skill-package view of vocational training. But many more difficulties have been encountered in these surveys than the uninitiated might expect, difficulties that arise from the fact that ours is an economy characterized by continuous adaptation and change in thousands of separate, though interacting, centers of activity. As anyone who has undertaken an intensive labor market analysis of job structures, recruitment, promotion and wages is fully aware, it is often extremely difficult to identify jobs that are comparable across firms even in the same town and the same industry. Furthermore, there is ample evidence to show that longer-term changes in the quality and productivity of labor are associated with changes within the same "occupational" rubrics to an even greater extent than with changes in the occupational structure as those changes are usually measured.[20] It is hardly surprising, then, that manpower forecasters have had even more difficulty in projecting skill than in projecting "occupational" shifts; this experience has been repeated in country after country. Yet it is skills, not occupations, that are relevant to educational decisions, whether educators choose to set up curricula that combine training in skills required for particular "occupations" or to slice it the other way. Given the dynamics of technological change, I very much suspect that the most serious and best justified criticisms of vocational education stem from its inheritance of an orientation of the "occupation", an orientation that may be appropriate to training for some of the more traditional trades (and that serves very well as an aid to craft unions in maintaining their positions), but an orientation that is clearly inappropriate in preparation at secondary school levels for careers that will develop along the growing fronts of economic change. For that matter, on those fronts the whole notion of "occupational requirements" begins to look a bit topsy turvy; more pertinent is the question what skills or clusters of skills contribute to proficiency in either various or particular occupations, whether or not they fit into a slot defining what any particular occupation "requires."

Clearly, to tackle questions posed in this way calls for labor market analysis of a high order. Indeed, increased ability to make certain kinds of predictions as these come out of better understanding of processes of change in labor market demands is much to be desired, and not only for what this could contribute to better educational planning but for other purposes as well. Looking more specifically to the kinds of labor market analysis and projections most useful for vocational education decisions, what can we say about types of skills to which attention should especially be directed, and about the relevance of assessments at the national versus at the local labor market levels? A critical lead into this question has already been provided in the preceding section, on human resource formation in schools versus on-the-job. Taking that section as read into this one, we can begin by concentrating attention on the kinds of skills that are proper candidates for secondary school and junior college curricula. Among these we can set aside the most general kinds of skills, in language, mathematics and basic science; if there is one thing the economist can predict with assurance it is the continuing demand for such competencies, whatever specialties may be built on to them. This virtually takes care of the secretarial side of commercial subjects as well. There is wide applicability of such skills and there can be no doubt of the long-term stability in demands; specialized equipment is comparatively inexpensive and depreciates as fast as it obsolesces so far as training-relevant obsolescence is concerned; and the specialized components of such training constitute a small (and declining) fraction of the whole. It doesn't take a manpower forecaster to point out that the teaching of bookkeeping and sub-accounting skills in many of our secondary schools has been obsolescing and some major overhauling may be in order; an economist may have a little something special to say on this at a more detailed level than is appropriate here.

This brings us closer to the more specialized and/or newer, non-traditional skills, where decisions are more difficult. It is convenient to simplify presentation here by treating what is really a skill continuum as though it were a dichotomy; there should be no difficulty to the reader in conceiving various mixes that lie in between. On the one hand, we have skills on the frontiers of development, as computer programming; on the other hand, we have trade skills that require less abstract or conceptual learning, are more traditional, and may offer the best opportunities available to students lacking inclination or aptitude for the learning of other kinds of skills.

The former, skills on the frontiers of development, offer a special challenge to labor market diagnostician and educational planner alike; in my judgment there is no doubt whatsoever that we could do much better on this front if we would focus upon identifying the newer or rising skills that have wide applicability, and that unquestionably promise long-term demand stability or growth. Only such skills are properly taken on by most schools or school systems. Economists specializing in labor market analysis for manpower forecasting have obligations to make better use than heretofore of their analytical heritage and their knowledge of economic processes in a focus upon this strategic area. While there can be no doubt that new programs or curricular innovations stemming from such analysis will be most successful if they are first introduced in areas in which the new job opportunities are most concentrated, no special attention to local as against national labor markets is entailed.

Turning now to the trades that are more traditional and/or make less demands upon abilities to deal with abstractions, we have problems of a different kind. The graduates of such trade courses are peculiarly vulnerable to shifts in labor market conditions, and especially so if they are trained in skills subject to sharp cyclical fluctuations. These students become the men and women with the most constrained range of activities in which they can apply their skills. The problem of securing entry to the job market is aggravated wherever wage rigidities block market adjustments and monopolistic controls restrict entry, but by the same token once an individual becomes established he is protected by these restrictions. Under these circumstances it should hardly be surprising that the most severe criticisms of vocational school offerings are commonly directed to the "over-supplying" of graduates in one or another of the traditional trades.

The first problem to recognize is the problem of short-run variabilities as distinct from longer-run trends. The schools cannot and should not switch their programs with every temporary whiff of the winds, and neither, for that matter, should vocational guidance workers.[21] On the other hand, longer-term trends in the occupational structure will be taken into account by rational and informed educational decision-makers. Educational systems have their own momentum, and there can be no doubt that some trade programs persist and are even automatically expanded when more adequate attention to longer-run trends would indicate their reduction. A good manpower forecaster can and does point to the broader national trends that constitute the background for such decisions. However, this does not say what particular schools in particular places would be best advised to do. This, I suggest, is where we have special need for more intensive examination of both the range of training alternatives within and outside of the schools and the local labor-market situation. However, and this is important, if we are to serve those most in need of trade training the definition of what constitutes a "local labor market" must encompass a territory as wide as may be required to provide a meaningful range of job prospects. For schools in remote areas of heavy out-migration, the whole notion of a "local labor market" then becomes elusive. The relevant "local" market is far from local. It is made up of the multiple destinations to which the bulk of young migrants will stream: near or far this tends to be the destinations in which they already have brothers and sisters and cousins. To define the pertinent "local markets" more narrowly is to specify that youth in the remoter and more depressed areas in particular are not to be counted.[22]

CONCLUDING REMARKS

The major themes and conclusions of this paper can be summed up briefly:

1. Although I have used the term "vocational" in the narrow sense that identifies it with conventional usage among educators, this can be very misleading. Vocational preparation, in the sense of preparation to take an active and productive place in the economy, encompasses almost everything that schools teach, but especially instruction in the general foundation subjects that provide men with the capacities to teach themselves -- language, mathematics, and basic science.

2. The most important contributions that economists can make as advisors to educational planners, including decisions concerning "vocational education" in particular, stem from a basic analytical framework that calls for the systematic examination and assessment of alternatives in terms of specified goals, resource limitations, and "production functions" (in this context the effects of various ways of combining resources on the learning results and their value). Economic research directed to these problems is as yet no more than a squalling infant, and it needs a lot more nourishment before we can expect much of it. But more and more refined research is not the only, or even the first need. In my judgment a first requirement is that a few economists sit side by side with educators in mutual learning and problem solving sessions.

3. Following upon 2, I suggest further that a more creative and intensive exploration of both alternative loci and timing of different types of learning is long overdue. Actually society is moving ahead of us in this direction. We are beginning to get feed-backs from experimentation with adult up-grading programs (including benefit/cost assessments of them). Meanwhile progressive business leaders have become increasingly involved in educational endeavors with the less advantaged, not only for adults but even in a few cases with school-age children. These developments should further loosen up the tacit, unrecognized constraints that have limited decision-making with respect to vocational education in the secondary schools. The results should be a much more creative and systematic search into alternatives, both within those schools and in their relations with other agencies.

4. It is time that we took a new look at "the drop-out problem": is drop-out in fact at the heart of the problems faced by

youth who are unable to make satisfactory adjustments in the world of work? Once we take fuller account of the fact that the schools are not the only non-family agencies of training and acculturation, and that some of these tasks may be better done through other channels, perhaps less concern will be given to retention in school, more to the drawing of drop-out-prone youth into active learning and working lives.

5. When a new-style conventional-style manpower assessor meets an old-style conventional vocationalist in the equation "individual = skill package = occupation," the effect is a building up of fictional problems and the aggravation of real ones. The fictional problems stem from rigid assumptions of inelasticities of substitution and the focus on "what does an occupation require?" rather than "what is the range of applicability and the productivity effects of various skills?" The real problems are faulty educational decisions that are biased *against* change and in support of obsolescent practices and monopolistic labor-market constraints -- despite the clear intention of the Vocational Education Act of 1963 to do just the opposite.

6. *The economist* specializing in labor market analysis for manpower forecasting *has a special obligation* to make better use than heretofore of his analytical heritage and his knowledge of economic processes. This calls for analyses that will cut through the skill-occupation matrices from a skill perspective. Most important, it calls for special emphasis on the frontiers of change, to identify the newer (or rising older) skills that have wide applicability and for which it is reasonable to expect long-term growth. These are the frontiers at which labor market analysis can help guide educators to the most promising and important innovations in curricula, and not only at a general but also in some cases at quite detailed levels of specification.

7. By virtue of his profession, *the educator has a special obligation* (a) to guard against tendencies of manpower technicians to think in terms of either abstracted skills or occupations to the neglect of people, and (b) to keep an open mind to training and learning alternatives outside of the formal school system. It is not two-legged skills or tidy skill packages that hop about in search of places; it is multi-dimensional men and women who will find or not find satisfactory jobs and careers, in which they can make useful contributions to the society. That people must be central should be sufficiently obvious when we remember that the schools are preparing children and youth for a forty-to-fifty-year working and learning life in an economy in which the one real certainty is the certainty of change.

FOOTNOTES

[1] Occasionally economists even condemn themselves and their profession for failure to provide just such "answers". It is difficult for the layman to distinguish between such self-condemnations and the self-criticisms that point to misapplications of our analytical tools or to the obligation to undertake more refined empirical and analytical research as a basis for providing more pertinent guidance in the making of decisions concerning human resource development policies and programs.

[2] He may of course set his own priorities, but as a man, not as an economist. In my view, any economist who deserves to be called a man will do so: but he is under a special obligation, in view of his profession, to be explicit about such values whenever they are relevant.

[3] Neither do I intend explicitly to discuss "systems analysis". Methods sometimes labeled "systems analysis" are implied in the more complex variants of benefit/cost and cost-effectiveness analysis.

[4] Research into these experiences continues. For summary evaluations of work completed through 1966 see Gerald G. Somers, The Experience with Retraining and Relocation (in press, Wiley and Sons), and Thomas I. Ribich, Education and Poverty (mimeo), The Brookings Institution, 1966.

[5] I do not want to exaggerate these distinctions, however. The need for publicly financed future up-grading programs will be in part (though only in part) a function of what is done in the schools today. Further, many of the considerations that are relevant in the regular schooling versus on-the-job training comparisons are similarly relevant in assessments of alternatives with respect to loci and financing of adult up-grading efforts.

[6] Here I am referring to money valuations that are moored, directly or indirectly, to the market, including imputations of market values, as in the pricing of student time. In principle it would be possible to set up fictional pricing systems that introduce quite different valuation criteria, but unless the decision situation is very narrowly defined, within sharp constraints, fictional pricing of all relevant variables is another matter. Individuals get around this quite easily in the thousands of conscious and unconscious choices that they make because all that they need is an ordering of preferences, not measurement of the distances between them; these are the "n-dimensional preference surfaces" that economic theorists posit. But an n-dimensional preference surface for a society as a whole is not even a theoretical possibility, let alone an empirically observable phenomenon.

[7] T. W. Schultz gives estimates that put this figure at 60 percent in the United States in 1956 and in Israel and Mexico in 1957; the estimate for Venezuela in the same year was 80 percent. (See his Economic Value of Education, Columbia University Press, 1963, page 29.)

[8] Usually they are screened for entry. Those not accepted then revert back into general curricula.

[9] The best studies thus far available are (1) Michael K. Taussig's assessment of evidence from various sources for New York State in his paper "An Economic Analysis of Vocational Education in the New York High Schools, prepared for the Conference on Vocational Education, The Brookings Institution (April 17-18, 1967) and (2) Arthur J. Corazzini's follow-up study of graduates of various courses in the secondary schools of Worcester, Massachusetts, presented at the same conference under the title "The Decision to Invest in Vocational Education: An Analysis of Costs and Benefits." The papers for that conference are being revised for publication by Brookings. Other studies are in process. The most important to my knowledge is that directed by Jacob Kaufman, at the Institute for Research on Human Resources, Pennsylvania State University. An interim report of their findings gives the most optimistic estimates thus far so far as the benefit/cost balance in vocational-technical education is concerned. However, these preliminary results do not include capital and equipment costs and commercial are not distinguished from technical-industrial or trades curricula (both of which bias the estimates of cost differentials downwards); also they do not separate males from females. In other respects this is the most adequate study to date, however, and the revised and expanded final report, a year hence, should be of considerable interest.

[10] There is some evidence to this effect in the preliminary findings of the Pennsylvania State University study, though it is not yet possible to distinguish the sexes and the problem of separating out the commercial course graduates remains. Further evidence is provided by a preliminary examination of results from an eight-year follow-up study of male graduates of various streams in a huge Chicago multi-course high school; that study explicitly explored on-the-job training and

earnings time paths, controlling for ability and some other traits.

[11] The reference is to data provided in the paper by Corazzini (see footnote 9), but not to his way of treating them, which was erroneous when it came to the incorporation of the drop-out prevention effects in the benefit/cost calculations.

[12] This is the case even if we take an extreme structuralist view of unemployment problems (which I do not). There is no need to join the structuralist versus demand-deficiency debate here.

For an extremely interesting benefit/cost analysis of a special drop-out prevention experiment, see Burton A. Weisbrod, "Preventing Highschool Drop-outs," in Robert Dorfman (ed), Measuring the Benefits of Government Investments (Brookings, 1965).

[13] Ribich takes reduction of poverty as his assumed goal in what is essentially a cost-effectiveness analysis of various alternatives, but incorporating benefit/cost analysis wherever possible for sub-problems. See his Education and Poverty (op. cit.).

[14] A strict benefit/cost accounting in terms of national income effects might of course lead us to reject both alternatives, especially for "hard core" cases; but the comparisons will still be relevant even under such circumstances if we consider the end of drawing such youth into the world of work as worth some sacrifice in aggregate national product.

[15] Basic lower-level general education is in fact being provided for selected workers in some large corporations today, as an essential preparation for more specialized training. This is exceptional, however. While I would raise no question as to the profitability of such investments to the firm assuming that the men are already hired and that they will stay on, the hiring of new employees on such a basis would not be undertaken in other than an extremely tight labor market or as a social welfare measure.

[16] If they are not fully understood, economists' findings that unadjusted rates of return to investments in the first two years of college are low would be misleading here. Those low rates reflect the fact that the bulk of the adult population with "some college" is made up of men who dropped out of four-year courses. This is a negatively selected group in ability and/or motivation, and their post-secondary schooling is not at all that of the junior technical college.

[17] See Milton Friedman, "The Role of Government in Education," Chapter VI of his Capitalism and Freedom, University of Chicago Press, 1962.

[18] An overview of this situation is included in a paper by Gerald G. Somers on "The Response of Vocational Education to Labor Market Changes," (prepared for the Conference on Vocational Education at the Brookings Institute, April 17-18, 1967, mimeo).

[19] This has more distinctively American features than most of us suppose. The various "technical" streams in the French and German systems, for example, can be terminal at several steps along the way or continue up through post-graduate university levels; this means that more of the students in technically oriented curricula receive intensive training in foundation subjects such as applied mathematics and science at the secondary level, whereas students who go through our technical secondary schools receive comparatively little of this. This is a somewhat paradoxical twist when we consider the American faith in the "comprehensive" idea, and the frank and overtly justified streaming of students on the European continent.

[20] It must be admitted here, however, that the occupational categories used in such studies are broader than those in Area Skill Surveys that attempt detailed use of the Dictionary Of Occupational Titles.

[21] Manpower assessments on a national level without national control of numbers of places in various training programs can easily aggravate short-term swings between shortages and excess; swings in engineering enrollments, entry salaries, and publicising of projected shortage or excess illustrate this tendency. It is arguable that the more locally oriented labor market analyses are less likely to have such effects, more likely to help smooth short-run adjustments.

However, I know of no evidence on this point, one way or the other.

[22] This is all the more serious in view of the fact that such areas will not have proprietorial schools to fill the gap.

Michael J. Piore*

REACTION

In concluding her paper, "Decisions for Vocational Education: An Economist's View," Dr. Mary Jean Bowman comments that for economists to participate in the formulation of educational policy "the first requirement is that a few economists sit side by side with educators in mutual learning and problem solving sessions." Her paper is an attempt to open this dialogue by presenting the economist's view. As an economist, I share that view. The important reactions are not mine but those of the educators in the audience. I can only expand upon the themes which Dr. Bowman has already developed. I do so at some risk for Miss Bowman has presented the view of the economist with a circumspection and attention to the limitations of the discipline that is not easy to maintain.

I would like, in my comments, to reinforce the sceptism evinced in the paper about the economic contribution of narrow vocational education as it exists today. Much of Dr. Bowman's sceptism derives from limitations inherent in the attempt to prepare people for very specific skills and occupations. To succeed in this endeavor, the content of the education must keep abreast of changes in occupational requirements. The curriculum in many vocational education courses, however, is built into heavy industrial equipment, and adjustment in the curriculum is deterred by the capital investment required to change that equipment. Similar problems are encountered in keeping the teachers abreast of change. Such rigidities are overcome when training is conducted in the enterprise by the intimate connection between the training and the productive process.

The rigidities in the school curriculum are not insurmountable. The relevant question is whether the cost of surmounting them is warranted when compared to the costs of alternative methods of meeting the relevant occupational requirements. As Dr. Bowman is careful to point out, we do not yet know the answer to this question. But, in principle, economists should be able to answer it.

It seems to me, however, that there is a more basic question here: Whether the public school system, as an institution is capable of overcoming the rigidities in the vocational curriculum even if the cost calculus suggests that it do so. The requirement of flexibility is impressed upon the productive enterprise by the necessity of survival as a profit making institution in a market economy. The public school system operates in a very different environment, and the system of rewards and constraints inherent in that environment may preclude the requisite flexibility.

The difference between the school and

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the productive enterprise was brought home to me by the experience of a machine tool manufacturer which established a special vestibule training program to meet an acute labor shortage. To run the program, the manufacturer hired a vocational education teacher from the local school system. When I visited the plant, the program had just been discontinued because of the supervisory complaints that the training was "ruining" new recruits. The major problem, it turned out, was that the teacher taught the recruits to be too sparing of raw materials and too careful not to ruin the machinery. As a result, the recruits were unable to meet the pace of production on the plant floor. The teacher taught in this way because materials and machinery were the major constraints upon the vocation program in the schools. But the plants "vocational" requirements were determined by a different set of constraints. In this case, the major constraint operative in the plant but not in the school was time.

The particular problem which this example illustrates can be overcome. The manufacturer had, in fact, already taken steps to do so by retraining the teachers it had hired and contributing scrap material and its own machine repair services to his school. But such solutions do not overcome the institutional differences which created the problem in the first place. The most disturbing aspect of the example is that the discovery of the problem was fortuitous and the solution particular and possibly temporary. There was little to indicate that the new arrangement between the school and the plant would last once the labor shortage had abated or that it would spread to other schools and other occupations. For the more basic problem of keeping equipment and teachers abreast of technological developments, a one shot infusion is certainly not sufficient. If vocational education is to meet this problem, incentives must be provided to maintain the equipment and teachers on a continuing basis. The provision of these incentives will require changes in the institutional environment in which the school operates.

The design of an institutional environment to meet specified goals is, in principle, an area in which economists should be of some help. We have not, to now, been much concerned with this area. Our lack of interest has been a product, I believe, of a preoccupation with the private economy, where the required incentives are by and large present, and, in our theoretical work, with the special private case of a perfectly competitive model where the incentive structure is, by definition, optimal. The increasing involvement of the economics profession in the governmental and nonprofits sectors should strengthen our understanding of institutional structures and their effect upon behavior. Those who seek our advice should be pushing us in this direction. I do think that we can eventually be more germane than Milton Freedman and his proposal of educational script. (Though I would myself reserve the right to continue to toot it upon occasion.)

For vocational education, the key to the problem will prove, I believe, to be the creation of linkages between the private sector, where incentives to overcome obsolescence are already present, and the school system where they are not. One way to achieve this linkage is to induce employers to act as a pressure group. Such inducements are present in a tight labor market when employers face labor shortages and are, hence, in acute need of the output of the schools. Unfortunately, tight labor markets in our economy are of short duration, too short to generate a continuing employer interest. We must, therefore, look for a substitute.

In higher education, the substitute is the linkage between teaching and research. It is probably not possible to reproduce this kind of mechanism in the vocational education system, although it should be noted that craftsmen do participate in the final developmental stage of new industrial technologies and, to this extent, there is a place for vocational teachers in research if not for their students.

Perhaps a substitute can be developed out of the limitations of on-the-job training.

One such limitation, for example, is that trainees have low seniority and, in loose labor markets, tend to be laid off. This interruption of training is not only detrimental to the learning process: it frequently also results in the trainee investment. Perhaps, in loose labor markets, it would be possible for the school system to temporarily reabsorb the trainees using the time for supplemental instruction. The temporary expansion might be faciliated by using as teachers supervisorary personnel who, during the slack periods, are redundant in industry. Complimentary seasonal and cyclical patterns in different industries might reduce the peak load problem in the schools.

I suggest this only as an example, but I do hope it indicates that there is room for additional thinking along these lines.

I would end, nonetheless, on a cautionary note. One characteristic of the problem of obsolescence and rigidity is that brand new schools will always be better attuned to occupational requirements than old ones. In a period when new schools are being built, things will, therefore, look to be improving. But the critical test is whether the new schools, as they age, can maintain the capacity to meet occupational requirements. For this, success at the forefront of vocational education is a poor indicator.

MANPOWER

Ivar Berg*

MANPOWER ANALYSIS AND VOCATIONAL EDUCATION: PROBLEMS AND PERSPECTIVES

Students of manpower problems do not represent a single discipline; it is therefore not possible, in response to the invitation, to lay out a "manpower perspective" in the same sense that economists and sociologists can lay out the perspectives they bring to bear in analyzing problems attending social development. Indeed, the perspectives of those who study manpower problems are likely to be those of the separate disciplines -- principally economics, sociology, and psychology -- from which they move in their research. I am obliged, therefore, to engage in a kind of raw empiricism and to focus on the strands in a tapestry of research findings, the overall design in which is not yet terribly clear. In the following pages I will examine seven broad sets of findings from research on manpower problems which must of needs be the "functional equivalent" of a disciplined perspective in which we may view vocational and technical high school and post high school education. The strategy will be to delineate these sets of findings and to regard them, in turn, as evidence in support of propositions about the subject of our symposium.

I. Education and Job Opportunities: A Limited Perspective

There is no need to dwell at any length on the point that the educational achievements of individuals have become increasingly important to their occupational achievements. Employers, policy makers, and even critics among the leaders of America's "disadvantaged" populations sing praises, if somewhat discordantly, of schooling as an important means of economic salvation. While it is true, as we shall see below, that one may easily exaggerate in this context the case for education, it is nevertheless clear that a number of jobs have changed sufficiently in content to require employers to fill them with better educated people. It is also true that there has been somewhat greater expansion of jobs that traditionally required more education than of jobs that could be performed by people with "less" education.

These educational requirements have increasingly come to be formulated in terms of diplomas and degrees, however, rather than in terms of specific educational experience. While some employers prefer to hire from among applicants those who have taken a particular course or two, there is little evidence that the bulk of employers pay much attention to the overall program that applicants actually pursue in schools, while much "credit" is given for the successful completion of total courses of study resulting in diplomas, certificates, and degrees.

In this vein it is worth noting that

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Kaufman and Schaefer, and others at The Pennsylvania State University, have shown that there are relatively few observable differences between graduates who pursue the three conventional high school programs in respect to job experience, work satisfaction, or among the views held toward them and their performance by their employers.[1] Top managers, according to their findings, credit the training afforded young employees on the job while personnel administrators see employee adequacy as a reflection of their astute selection strategies, to be sure. But otherwise, the main differences in personnel and organizational payoffs have to do with the median IQ's of the non-college bound population, and with race and sex differences in salaries that may reflect discriminatory policies in the market place more than anything else.

The point is that education, whatever the particular type, is a good thing according to a growing number of employers, and that young people who complete various blocks of educational programs are therefore better off than those who do not, almost without regard to whether the words on the degrees and diplomas would serve to indicate something specific about the substance of the educational experiences these credentials symbolize.

The implications for vocational education of the rather undifferentiated social approval of "completed education" would seem to be fairly clear. If it can be shown, as Kaufman and his colleagues tentatively suggest may be the case, that vocational programs help hold students who might otherwise have dropped out, then it is this holding power that comes to be most significant in an " education conscious" society. A search for program content that will help hold youngsters long enough to qualify them for an educational credential would seem to make some considerable sense as social investments go.

The Kaufman-Schaefer data further suggests that such research and the application of findings would have favorable results to the degree that school boards, teachers, and community business leaders support them. These data indicate that such support is not widespread, that many uninvolved businessmen have little awareness of their significant roles in the "voc ed" area, that many teachers have a narrow view of education that leads them to assume patronizing postures towards vocational (and perhaps technical) education, and that more than a few school administrators treat vocational education with a rather cavalier disinterest.

Thus it would seem reasonable to infer that appropriate action must be taken to correct the perspectives of educators and to enlist the involvement of business leaders (both of which relate empirically to the quality and breadth of vocational training, to the realism of vocational education's objectives and to the happier labor market experiences of graduates) in respect to vocational education. It ought to be recognized, however, that it is certification and credentialling, hence student interest, that are problematical, rather than specific training, in an increasingly education-conscious society.

II. Educational Requirements for Jobs: A Broader Perspective

While one may affirm that there is a growing need for high school, technical school, and college graduates in the American economy, one may not generalize that technological and other changes explain all of the increases in educational requirements for jobs. Indeed it is not even so very clear that we are as "short" of highly educated manpower as the conventional wisdom in these matters may lead many of us to believe.

Thus there is evidence, collected by the author, in collaboration with Dr. Marcia Freedman of Columbia's Conservation of Human Resources Project, that the general character of the issue is complicated, more complicated, indeed, than the conventional wisdom suggests.

Consider the following table in which the proportions of jobs requiring three different levels of what the U.S. Employment Service calls "General Educational Development" (in 1956 and 1966) are compared with the proportions of the experienced labor force having achieved roughly equivalent levels of education (according to the dicennial censuses in 1950 and 1960). The "requirements" are based on studies of employer job descriptions for 4,000 occupational titles by skilled U.S. Employment Service job analysts in 1956 and in 1966. The assignment of peoples' "years of formal education" to various GED categories* is a problematical task and can be cast in several versions, no one of which does full justice to one or more objections that could be made by the careful observer. We have constructed four versions, in addition to the one presented in Table I, in each of which the six categories have been reduced to different combinations of three categories, and we are not satisfied that any one of them is free of difficulties. The important thing for purposes of our symposium is that whatever the translation problem, we at least can look at GED and at population distributions over time; whatever the deficiencies, they are pretty much constant and do not therefore detract from the comparative value of the data. One of the versions appears in Table II.[2]

The data suggest that there has been a more rapid expansion of jobs in the "middle" category, that "high" education jobs have expanded somewhat faster for men than women, that those in the "middle" have expanded faster for women than for men, and that educational achievements have followed a pattern according to which many highly educated people are incumbents of jobs "requiring" (sometimes, as in case of women, substantially) less education than they have achieved. One implication of these findings is that employers whose jobs fall in the "middle" level are simply taking advantage of, or at least believe they are benefiting, from the increasing educational achievements of the work force by employing people of "higher-than-needed" educational achievement when they are available in a given labor market.

It may well follow from this that the educational achievements of the nation's youth are important not for actually performing on jobs (for which less education would do), but for entry into jobs. Assuming that the labor market does not remain forever tight a factor that would appear to loom large in determining whether employers can raise educational requirements regardless of job content and "actual" job requirements,** it is reasonable to conclude that the crucial issue for the young is one of educational credentials.

When the labor market is tight, as it is now, in a wartime period when a booming economy experiences additional manpower pressures, we may expect a loosening in educational requirements. The full benefits of such developments, however, reach the lesser educated and "uncredentialed" only very slowly; one does not reverse the processes at work in the tables overnight. The most immediate implications for the symposium would seem to be in the area of post-high school technical education. Thus to the degree to which employed Americans wish to "upgrade" themselves and have access to educational plants facilitating such additional training as upward occupational mobility demands, to that extent will new entry jobs become vacant. Again, however, the "demands" involved may be those alleged by employers rather than requirements that inhere in jobs themselves.

In short we are embarked on the solution of a problem that exists in part because many people -- especially employers -- choose to define requirements as they do. The issue is in considerable part one of the credentials, not educational content; part of our investment in education is made in the light of preferences, allegations, and convenient definitions, and not in the light of "actual" job requirements. Young people are increasingly caught in a web of social definitions not easily supported by job analyses; getting them better educated reflects our acceptance in policy and ideology of employer requirements. It therefore matters more that we respond with programs that will lead to credentials -- again, by holding youths in schools -- rather than to

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*For a description of the GED categories, see Appendix A.

**See Footnotes.

TABLE I

Educational Requirements for Jobs and Educational Achievements of the Experienced Labor Force, 1950-1960 (in millions)

Required Scale GED Level*	Required						Achieved						Achieved Education Scale
	Male		Female		Total		Male		Female		Total		
1950													
1	3.8		.2		3.9		10.3		2.6		12.9		Less than 8 years
2	8.9	21.6	6.2	12.4	15.1	33.9	8.1	26.3	2.3	8.0	10.4	34.3	8 years
3	8.9		6.0		14.9		7.9		3.1		11.0		1-3 years high school
4	15.7		1.9		17.7		8.4		4.9		13.3		4 years high school
		17.9		3.2		21.2		11.3		6.5		17.8	
5	2.2		1.3		3.5		2.9		1.6		4.5		1-3 years college
6	.9	.9	.2	.2	1.1	1.1	2.8	2.8	1.2	1.2	4.1	4.1	4 years college or more
1960													
1							7.9		2.5		10.4		Less than 8 years
2	6.8		2.0		8.8		6.9	24.5	2.6	9.8	9.5	34.3	8 years
		21.6		12.6		34.2							
3	14.8		10.6		25.4		9.7		4.7		14.4		1-3 years high school
4	12.7		4.9		17.6		10.6		7.1		17.7		4 years high school
		20.6		8.2		28.9		14.8		9.5		24.2	
5	8.0		3.3		11.3		4.2		2.4		6.5		1-3 years college
6	1.2	1.2	.2	.2	1.4	1.4	4.3	4.3	1.7	1.7	6.0	6.0	4 years college or more

* For definitions of these 6 GED levels, see Appendix "A".

Table II

Data in Table I Reconstituted by an Alternative Translation of GED into School Years

	1950				1960			
GED	Required	Achieved	Ach.-Req.		Required	Achieved	Req-Ach.	Achieved Education
				Total				
1-3	60.3%	61.1%	(+ .8)		53.1%	53.2%	(+ .1)	Less than high school
4 & 5	37.7	31.7	(- 6.0)		44.8	37.5	(- 7.3)	H.S. graduates and those with some college or tech.
6	2.0 100.0	7.2 100.0	(+ 5.2)		2.1 100.0	9.3 100.0	(+ 7.2)	College / schooling degree degree or more
				Males				
1-3	53.4%	65.0%	(+11.6)		49.7%	56.2%	(+ 6.5)	Less than high school
4 & 5	44.3	28.0	(-16.3)		47.5	33.9	(-13.6)	H.S. Grads. and those with some college or teaching.
6	2.3	7.0	(+ 4.7)		2.8	9.9	(+ 7.1)	College / schooling degree or more
				Females				
1-3	78.2%	51.1%	(-27.1)		60.1%	47.0%	(-13.1)	Less than high school
4 & 5	20.7	41.1	(+20.4)		39.1	44.9	(+ 5.8)	H.S. graduates and those with some college or teaching
6	1.1	7.8	(+ 6.7)		.8	8.1	(+ 7.3)	College / schooling Degree or more

specific skills.

Evidence on the point comes from an analysis in N.Y. State, by the N.Y. Department of Labor, of the achievements and requirements relating to technicians in that state. Technicians in most industries have not only achieved sufficient education to satisfy employers' *minimum* requirements, but have completed even more education, on the average, than is held to be *ideally* desired by these managers.

The upshot of these remarks is that young people are being squeezed by educational requirements *and by the achievements of those already in the work force*, facts that perhaps make their credentials more important than their skills, facts that, in turn, become more serious as the labor market loosens and that become only slightly less an issue when the labor market tightens.

Job requirements have indeed changed, but they have changed in a way that educational policies tend to exaggerate. The belief that we are short of top-educated people in America must probably be tempered by the possibility that our *highly* educated people are competing with *lesser* educated people for jobs in the *middle rows* of Tables I and II.

It may be noted, in passing, that employers generally feel that they benefit from "higher quality" work forces and believe, according to the statements in a small sample of large company personnel administrators interviewed by the writer, that educational achievement correlates with "quality." Data I have collected, and to which I will refer in part V of this paper, indicate that employers may rue the day they made this connection in their minds between quality and educational achievement.

III. Education and Promotability

Employers are inclined to justify the hiring of people "too well educated" for jobs assigned them on the ground that the better educated personnel are needed for promotion purposes. There is little evidence bearing this out. The evidence of economists that investments in education pays a handsome return, usually based on observed associations between education and income that would seem to bear out employers is somewhat suspect on this point. These studies do not take account of the degree to which peoples' salaries are *pegged* initially according to their educations, rather than productivity, in the hiring process.[3] The associations are thus to some indeterminate but probably substantial degree tautological. Since salaries and wages are used as measures of value added as well as income in these studies, it cannot be assumed from the data that employers are getting proportionate quantities of productivity for the salaries they pay either.

Such limited data as are available from the author's and colleagues' research, meanwhile, indicates that the promotability argument is a questionable one at best. Thus, for example, better educated people in a given job category tend to have higher turnover rates, leaving the lesser educated to the available promotions and salary increases in an enterprise. In a study of two large utilities, Marcia Freedman found that the variance in individual promotions, both meaningful (i.e. title changes reflecting skill differences) and nominal (routine promotions requiring relatively little screening), could be largely explained by employees' length of service; while specific courses were significant, *years* of formal educational achievement did not account for any of the observed variance in promotion experiences, and most of the meaningful promotions took place in the early years of service, serving thereby to "lock" employees into the firms for which they worked.[4]

Vocational educators may learn from these data the importance of studying, by follow-up research, the organizational career experiences of "voc. ed." graduates and building the lessons of such research into the vocational curriculum. It is important to discover, once educational credentials help in work attachment and in what Dr. Freedman call "work establishment," what is needed by young people to better prepare them, if I may use a barbarism, to negotiate organizational systems. The findings of sociologists who consider problems of organization would presumably provide a useful context within which to interpret the details of the career experiences of graduates two, five, and ten years after starting work. One lesson from these studies may be that organizational success goes to those who "hand in there," making the question of job choice all the more significant. That this choice process is ragged has been demonstrated by Reynolds, some time ago, and more recently by Kaufman and Schaefer whose data show that job-seeking is a largely accidental process for the majority of high school graduates of all educational "tracks" who do not go on to college.

IV. Technological Change and Labor Market Analysis

It is now fairly clear from the accumulating evidence that the effects of technological change are more clearly visible at the community level than in the data employed in macro-economic analysis. The reader may profitably consider a brief non-technical piece on the difficulty of estimating the effects of such changes in macro-analysis by Robert Solow.[5] It turns out to be a most difficult choice involving all the conventional distinctions favored by economists, not the least being that between short-run and long-run effects.

At the community level, however, it is possible to make some reasonable estimates of the configurations of employment, employment requirements, and labor force characteristics and to cope with some of the problems earlier sections of the present paper have sought to highlight. Thus it would seem to be very desirable indeed to ascertain the detailed nature of employer requirements, a job in which U. S. Employment Service job analysts can be extraordinarily helpful in doing and doing well. As modest as their facilities unfortunately are, they can train appropriate people in the details of labor market as well as job analysis, and work effectively with other agencies who have cognizance over problems attending the public's welfare at state and local levels.

The findings in such studies and analyses must be worked into the program designs for vocational education so that whatever programs content may be important for students' occupational experiences can be appropriately tailored to needs. However sovereign the credentials may be over content in determining the job opportunities of non-college bound students, there is need for ascertaining with more precision the residual role of specific task competencies and aptitudes among those who do complete degree programs.

Once again the Kaufman data are instructive, for they demonstrate that there was in general almost no relationship between vocational programs and the labor force requirements of the communities in which the training was offered, and this despite the very large proportion of graduates who stay or return to the communities in which they were "schooled."

Behind the aggregated data in Tables I and II there lies a reality the nature of which deserves the systematic attention of educational leaders, vocational educators and even graduates. Guidance programs that do not benefit from labor market analysis are simply not doing the job, a defect affecting perhaps as many as half of all high school graduates. It is at local and state levels meanwhile that we may note what technological and other developments are doing to jobs, to employment and to enterprises. It is indeed at the local level that we may look at the millions of jobs in Tables I and II before they have been aggregated, in order to determine whether educational requirements have gone up "for real" or because employers believe that raising educational requirements is a desirable move.

V. The "Overeducated" Worker

The points have already been made that increasing numbers of Americans, especially women, are drifting into jobs with educational achievements that are well above those needed for adequate performance in these jobs, and that employers view this development favorably. The logic offered the writer by businessmen (promotability considerations aside) has typically been that this leads to an increase in the quality of their work forces.

It turns out, however, that when the question of the relationship between education and "quality" is asked in empirical terms, the data do not support the practice of raising educational requirements. The data are disparate in nature, but their cumulative weight is to give support to a different formulation. When I compared the "better" with the "lesser" educated workers in respect to work satisfaction, productivity, and a host of other performance "variables, " I found that the better educated people in a given job category in a given firm or industry contributed as much or disproportionately more than less educated workers to the pathologies employers spend fortunes to reduce by personnel and "human relations" programs.

It is not easy to see a solution to this problem generally, let alone in respect to vocational education graduates. The findings do bear upon post-high school technical education, however.

It is perhaps this type of education that is most easily defended in a society with growing demands for technicians. The prospects, however, are fair that technicians with post-high school training, but without job experience, will find themselves even more "underutilized" than high school graduates, for employers only rarely will disrupt their work groups by starting new, better educated employees without experience in higher paying jobs than are available to his experienced work force, especially when the experience involved is organizational experience.

In the study by Dr. Marcia Freedman, already mentioned, it was determined that in four large employer organizations in the New York area, job titles were more often nominally different and that skill differences did not, properly speaking, constitute a very differentiated hierarchy. Organizational know-how did seem to count however, and this know-how is learned in organizations and not learned in school. The result: technicians become discouraged that they must, more often than not, start low in the title hierarchy; they come to realize in time that they would have been better off had they been guided and helped into engineering programs where a degree would have qualified them for a higher level entry job. Thus, technicians in a paper company on whom I have data had higher turnover rates with increasing pre-job educational training; their reasons for leaving: to extend their educations. It is not unlikely, meanwhile that many technically trained graduates of post-high school programs could complete college programs in the sciences in some of the lesser prestige institutions.

In the same context it should be noted that vocational (along with other non-college bound) graduates can profitably be exposed to occupational counseling in which the realities of organizational life are reviewed. The absence of sophisticated guidance for non-college-bound high school graduates and the ad hoc process of job seeking undoubtedly contributes to the poor match of expectations with work experience and thus to dissatisfaction and frustration in the work place.

VI. Workers Expand in Numbers to Fill Available Jobs

"Parkinson's Law" would seem to be amenable to an almost infinite series of apparently disparate formulations. Thus it is one of the nagging problems in the manpower area that people -- especially women -- come out of the woodwork when the demand for labor increases. Since increasing demands for labor contributes to both price increases and wage increases, the tendency is for more people to be "teased" into the labor force, or for more people to "moonlight, " that is to take additional jobs. Under these conditions employers in some instances have more, not fewer, choices to make among job applicants, and policy makers cannot depend upon tightened labor markets to solve the problems of particular populations who suffer most when labor market conditions are loose. These facts underline the importance of activity at the local level designed to familiarize employers with educational programs and to involve them in educational planning in ways that will help facilitate the emergence among employers of positive evaluations and commitments toward vocational programs. It is perhaps more important to a democratic society that the young have job opportunities than that middleaged people who moonlight or frequently re-enter the labor force be enabled to engage in higher levels of consumption activity, a value choice of significant implications.

It is inconceiveable that much can be done, in the face of the developments noted, if the job placement process is to be almost entirely *ad hoc*. Simultaneously it is inconceivable that the job placement of the young can be even slightly rationalized if bigger investments are not made in bringing employees, schools and the local offices of Employment Services into closer contact. The matching of training, people and jobs ought probably never be a closed system, but the anarchy facing the young can hardly serve any constructive purpose. The articulations required would not have to threaten the freedoms of persons or employers in a society long favoring the idea that a democracy depends in part upon an informed citizenry making personally gratifying choices. This should be no less true in respect to occupational choice than in respect to political choice.

VII. Negro Mobility as a "Piece of the Action"

While all the evidence is not "in," enough data have been processed by Dale Hiestand, a Columbia economist, to indicate that when Negroes experience new opportunities in the economy it is because whites have been mobile; Negroes are more likely to enter occupations that are "vacated" by whites than to compete with whites for "new" jobs. The details of Hiestand's analysis are too numerous and their interrelationships too complex to deal with in this paper,[6] but it is worth mentioning that he gives great weight, having already identified the "significance of economic growth for minorities," to the idea that breakthrough into occupations come to those who anticipate emerging areas of opportunity. This is not an easy task to be sure, and the training of minority groups must contend with the discrimination they face from employers, unions and white workers. "Leap-frogging" Negroes into jobs not yet vacated by whites or into new jobs that whites will otherwise be likely to monopolize, will not be easy, especially since, as Tables I and II show, there is already substantial competition for "Middle-education jobs." But hard as it is, there is *no* possibility at all without inventive work in our educational settings. Thus one may be discouraged by the emergence of a rash of private post-high school courses in computer technology for people who could in some instances be trained in public schools where the access of people to training opportunities is more easily guaranteed than it can be *after* the period of required public education ends.

Conclusion

We may state, by way of summary, that it is probably pointless to seek to deal with vocational education apart from manpower developments and to detach discussions of vocational education from discussion of education and work generally.

Vocational education must be seen within these two larger frameworks; changes in vocational education must undoubtedly be made, but it is no simple job to identify the nature of these changes apart from the constraints imposed by developments and policies having to do with the evolving linkages between schooling and work. The governing issues are not those over which vocational educators have very much control, and it is the resolutions of these issues that bear most heavily on vocational and technical education and the students pursuing such training.

Educational requirements for jobs are, as the burden of evidence in this paper suggests, in reality "educability requirements."

Vocational educators are now, therefore, willy-nilly, in the business of certifying the educability of their students almost without reference to the nature of the jobs these students will hold. I can see no reason why vocational educators should not seize some initiative in changing this, by locating through labor market analysis and negotiations with employers, a more differentiated role in the educational process than one simply shared with all other educators.

Thus in some of our larger cities corporations have undertaken to train employees in subjects equally well taught by professional educators. As part of an effort to reduce the magnitude of youth-employment problems they have developed "in-house" guidance and training programs. Some of these companies would probably be willing to share with vocational educators the burdens thus undertaken. One of the biggest banks in New York City has even contemplated designing a program of its own in remedial reading that would increase opportunities for it to hire young ghetto youngsters into a system which affords numerous opportunities for promotions to those who stay with the bank. In this context I would add that the role of corporations in Job Corps vocational programs needs to be questioned. Some of these ventures duplicate, at considerably greater cost, those available in systems of public education. An articulation of the two would seem to be desirable indeed.

Vocational educators also have the opportunity to differentiate their own curricula such that parts of the programs they offer can have high admissions requirements -- a technique for enhancing the status of vocational education and for discovering late bloomers among youngsters who drift into "voc. ed." programs because they have been "written off" in the early grades by educators who operate with very narrow and conventional definitions of ability, definitions that tend to focus on reading and "quantitative" skill.

The easiest of all negotiations for vocational educators should be those they can enter with the booming non-profit sector, especially the public services. So far as I know little is known about the "real" requirements for a growing number of public service jobs. Yet the kinship of public schools to state and local systems of government is such as to facilitate, to a modest degree at least, effective exchanges on the matter of the labor requirements with which those systems must contend.

One cannot, in conclusion, be optimistic about the prospects facing vocational education. The fact that degrees and diplomas are fixed in terms of numbers of years means that America must face the "drop-out problem." This, in turn means facing the "reading problem" in the lower grades, the "holding problem" in the upper grades and the "quality of schools" and the "quality of program content" problems at all levels. The fact that degrees and diplomas are prerequisite for jobs means that America must face a credentialling problem at the same time that portions of the skill-and-difficulty hierarchy are increasing at uneven rates. Even economic growth doesn't answer all the problems, given the flexibility of Americans in facing the decision to enter or not to enter the labor force.

The crucial issues for vocational education are those of holding and helping students enter occupations. I would urge that these educators avoid programs that 1) impose, by highly specialized training, unnecessary constraints on choice, 2) that eschew careful considerations of the placement problem, 3) that do not provide abundant guidance regarding occupations and opportunities and 4) that are not very closely integrated with the planning of employers, public and private, in local and regional labor markets.

FOOTNOTES

[1] Jacob J. Kaufman, Carl J. Schaefer, Morgan V. Lewis, David W. Stevens, and Elaine W. House, The Role of the Secondary Schools in the Preparation of Youth for Employment, University Park, Pa.: Institute for Research on Human Resources, The Pennsylvania State University, February, 1967, Chapter 6.

[2] This work was undertaken in connection with an effort to update and extend an analysis by R. S. Eckaus, reported in "Economic Criteria for Education and Training" in Review of Economics and Statistics, Vol. 46, 1964, pp. 181 ff. Our results will appear in a forthcoming monograph.

[3] See M. W. Reder "Gary Becker's Human Capital: A review Article," The Journal of Human Resources, Vol. II, No. 1, p. 103; and Albert Rees, Review of Gary Becker, Human Capital, in American Economic Review, September 1965, pp. 958-960.

[4] The Process of Work Establishment, New York: Columbia University Press, 1968.

[5] "Technology and Unemployment," The Public Interest. Vol. 1, No. 1 (Fall 1965), p. 17-26.

[6] See his Economic Growth and Employment Opportunities for Minorities, New York: Columbia University Press, 1964, esp. pp. 109-119.

**Thus in a longitudinal study of employers' requirements for jobs in New York's Monroe County, the National Industrial Conference Board discovered that educational requirements went up as high school commencement neared and went down again in the fall and winter seasons.

Morris A. Horowitz*

REACTION

... summarizing the findings of various research activities on manpower problems as related to vocational education, Dr. Ivar Berg has presented seven basic topics: (I) Education and Job Opportunities: A Limited Perspective. Under this topic Dr. Berg notes that regardless of the type of education, the diploma is the thing that employers want to see in a job applicant (this is the credential). He indicates that for some students vocational education may have more holding power than general secondary school programs, and that vocational education perhaps capitalizes on this holding power. (II) Education Requirements for Jobs: A Broader Perspective. Dr. Berg's analysis of GED ratings in USES materials, and U.S. census data seem to imply that employers are hiring workers with "higher-than-needed" education achievements, when available. From this it may seem that education achievement is not important for actually performing on jobs, but only for entry into jobs. And when the labor market is tight there is likely to be upward mobility; but the lesser educated are affected only very slowly. (III) Education and Promotability. He notes that the relationship is a vague one. And, that promotion could largely be explained by the employee's length of service. (IV) Technological Change and Labor Market Analysis. Here Dr. Berg notes that USES job analysts must study and understand the details of the labor market as well as job analysis. And these should be worked into the program designs of vocational education. (V) The "Overeducated" Workers. In examining the relationship between education and quality Dr. Berg notes that the data do not support the practice of raising educational requirements. (VI) "Workers Expand in Numbers to Fill Available Jobs." Here it is noted that as a labor market becomes tighter, the demand for labor results in moonlighting and in woman being enticed into the labor force. The "lesser educated" still do not have a good chance at job entry. (VII) Negro Mobility as a "Piece of the Action." Research seems to indicate that Negroes experience opportunities in the economy only when whites have been mobile; that is, when whites have vacated an occupation.

Comments

Conventional wisdom indicates that education is a good thing; that in a democracy more and more people should have the opportunity for more education; and that the more education a person has the better off he is. From the point of view of the humanist, the conventional wisdom on education makes sense. Education means a better informed society; and in a democracy personal financial resources should not be the principal factor in allocating educational opportunities; and the higher attainment one reaches in education the greater the possible financial rewards. And even if education does not help us in appreciating our society and the world around us.

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In recent years we have become more aware that what counts most in getting a job is not so much what we have learned, but whether we have served sufficient time in an educational institution to receive a diploma. This certificate apparently gives a potential employer the evidence he wants that the applicant "has what it takes" to learn the work and to perform successfully on the job. We see this attitude daily in our universities, where many students are more concerned with obtaining their degree than obtaining an education. This often causes great frustrations to teachers who are concerned with educating students, but the industrial system fosters the attitude, What can be done? Perhaps the solution is simpler than we thought. Could we not issue to all new-born children, along with a birth certificate, a Doctor of Philosophy degree? Thus, everyone at an early age would have the necessary credentials to obtain the job he desires. Employers would than be forced to discriminate among applicants upon some basis of ability to perform the work. How unique this would be for many employers!!

Such a system of granting a doctorate to the new-born would leave the education system for those who are really interested in obtaining a education. No degree, just an education. This is the kind of experiment about which I would like to speculate.

At one point in his paper, Dr. Berg indicates that there seems little difference between graduates who pursue the three conventional high school programs, in respect to job experience, work satisfaction or performance. If this is so, why worry about the content of vocational education? Apparently, the diploma received at the terminal point of the program is the crucial item. But if there is no rationale for content why purchase various equipment and why employ skilled teachers of vocational subjects? And, if "holding" the potential dropout is the key role of a vocational high school program would it not cost less just to amuse them into staying on? Or, if we decided there is a special benefit in their getting a diploma after a specified time in an educational program, why not pay the potential dropout to continue attending the program? This may be a small price for society to pay in order to find employment for the potential dropout. I am not certain that any single study can shake the contention that educational content makes little or no difference in job performance. However, I am currently involved in a research project of how workers acquire their skills, and an evaluation of the various training paths. It is a pilot study in which we are studying tool and die markers in the Boston area. This project is not yet completed, but partial results seem to indicate that those tool and die makers with a secondary school education are generally ranked higher in ability by their foremen than those without a secondary school education. In addition, those tool and die makers with a vocational high school education seem to rate a little higher than those with a general high school education. If these preliminary conclusions are borne out at the end of the study, it may be evidence that vocational high school education does serve more than just the function of assisting a person in obtaining his first job.

It may be noted that in a number of interviews in this research project on tool and die makers, foremen have stressed the importance of a good vocational high school education that has been focused on the theory and operation of machine shop work. Some foremen seem to feel that those with a good vocational high school education attain a craftsman-level of performance in tool and die work more quickly than those without vocational education.

Dr. Berg makes reference in his paper to his forth coming publication "Education and Work," indicating some of the general findings of that volume. The GED scales of the U.S. Employment Service were used as the basis for estimating the manpower requirements by educational levels. I still have strong reservations on the reliability of estimates of educational requirements and achievements, based upon the available USES and census data. However, I will withhold final judgment until I have the opportunity of examining the methodology Dr. Berg used.

If the statistics Dr. Berg presents stand up, we are over-educating the males in the labor force at the low-level jobs and the high-level jobs, and we are over-educating the females in the middle jobs and high-level jobs. Here, I cannot stress sufficiently Dr. Berg's point that it becomes more and more crucial for the job analyst to study and understand the labor market as well as job analysis; and that these factors must become part of the program designs for vocational education. But has there been real communication between the labor market analyst and the vocational education planner? I think not.

A few years ago I completed a study involving the GED and other ratings of the USES, looking for the possible effects of automation. The focus of the study was to see, over time, which occupations had been eliminated and which, if any, had been newly created. For both eliminated and new occupations, we were interested in work content and in education, training and other personal requirements. Because I failed to do what Dr. Berg apparently did with the USES data, my approach was rather narrow. My study was not involved with employment or the occupational structure; we examined changes between 1949 and 1965 in educational requirements of only those occupations for which such data were available. We selected five industries for study: (1) meatpacking; (2) rubber tires; (3) machine shop trades; (4) medical services; and (5) banking. It might be of some interest to summarize briefly our findings in regard to education requirements and training requirements.[1] In meatpacking the education requirements rose while the training requirements declined, although a majority of titles needed very little of each. In rubber tires there was some increase in education requirements, but a net drop in training requirements. In the machine shop trades both the education and training requirements rose, but a large number of the new titles needed less education, on the average than the continuing titles. Medical services, on balance, showed a rise in education requirements, but the education and training requirements of new-titles tended to be lower than of the continuing titles. In banking the education and training requirements rose, and the training requirements of new tides also rose.

From this sample survey of five industries it is impossible to generalize about changes in the education and training requirements of occupations. Intuitively, however, we feel that too many employers establish for occupations education and training requirements that are unnecessarily high. Does every factory employee have to have a high school diploma? Dr. Berg's statistics show an "over-education," compared with the education requirements. Much more research is warranted in this area, to test the hypothesis that more and more workers are being over-educated and over-trained for the various jobs they are likely to hold over a life-time in the labor force.

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[1] Training requirements as measured by the USES ratings, SVP, specific vocational preparations, which covers all types of vocational education, including vocational high school.

The following is a table explaining the various levels of general educational development.

GENERAL EDUCATIONAL DEVELOPMENT

Level	Reasoning Development	Mathematical Development	Language Development
6	Apply principles of logical or scientific thinking to a wide range of intellectual and practical problems. Deal with nonverbal symbolism (formulas, scientific equations, graphs, musical notes, etc.) in its most difficult phases. Deal with a variety of abstract and concrete variables. Apprehend the most abstruse classes of concepts.	Apply knowledge of advanced mathematical and statistical techniques such as differential and integral calculus, factor analysis, and probability determination, or work with a wide variety of theoretical mathematical concepts and make original applications of mathematical procedures, as in empirical and differential equations.	Comprehension and expression of a level to —Report, write, or edit articles for such publications as newspapers, magazines, and technical or scientific journals. Prepare and draw up deeds, leases, wills, mortgages, and contracts. —Prepare and deliver lectures on politics, economics, education, or science. —Interview, counsel, or advise such people as students, clients, or patients, in such matters as welfare eligibility, vocational rehabilitation, mental hygeine, or marital relations. —Evaluate engineering technical data to design buildings and bridges.
5	Apply principles of logical or scientific thinking to define problems, collect data, establish facts, and draw valid conclusions. Interpret an extensive variety of technical instructions, in books, manuals, and mathematical or diagrammatic form. Deal with several abstract and concrete variables.		
4	Apply principles of rational systems[1] to solve practical problems and deal with a variety of concrete variables in situations where only limited standardization exists. Interpret a variety of instructions furnished in written, oral, diagrammatic, or schedule form.	Perform ordinary arithmetic, algebraic, and geometric procedures in standard, practical applications.	Comprehension and expression of a level to —Transcribe dictation, make appointments for executive and handle his personal mail, interview and screen people wishing to speak to him, and write routine correspondence on own initiative. —Interview job applicants to determine work best suited for their abilities and experience, and contact employers to interest them in services of agency. —Interpret technical manuals as well as drawings and specifications, such as layouts, blueprints, and schematics.
3	Apply common sense understanding to carry out instructions furnished in written, oral, or diagrammatic form. Deal with problems involving several concrete variables in or from standardized situations.	Make arithmetic calculations involving fractions, decimals and percentages.	Comprehension and expression of a level to —File, post, and mail such material as forms, checks, receipts, and bills. —Copy data from one record to another, fill in report forms, and type all work from rough draft or corrected copy. —Interview members of household to obtain such information as age, occupation, and number of children, to be used as data for surveys, or economic studies. —Guide people on tours through historical or public buildings, describing such features as size, value, and points of interest.
2	Apply common sense understanding to carry out detailed but uninvolved written or oral instructions. Deal with problems involving a few concrete variables in or from standardized situations.	Use arithmetic to add, subtract, multiply, and divide whole numbers.	
1	Apply common sense understanding to carry out simple one- or two-step instructions. Deal with standardized situations with occasional or no variables in or from these situations encountered on the job.	Perform simple addition and subtraction, reading and copying of figures, or counting and recording.	Comprehension and expression of a level to —Learn job duties from oral instructions or demonstration. —Write identifying information, such as name and address of customer, weight, number, or type of product, on tags, or slips. —Request orally, or in writing, such supplies as linen, soap, or work materials.

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[1] Examples of "principles of rational systems" are: Bookkeeping, internal combustion engines, electric wiring systems, house building, nursing, farm management, ship sailing.

Specific Vocational Preparation: The amount of time required to learn the techniques, acquire information, and develop the facility needed for average performance in a specific job-worker situation. This training may be acquired in a school, work, military, institutional, or a vocational environment. It does not include orientation training required of even every fully qualified worker to become accustomed to the special conditions of any new job. Specific vocational training includes training given in any of the following circumstances:

a. Vocational education (such as high school commercial or shop training, technical school, art school, and that part of college training which is organized around a specific vocational objective).

b. Apprentice training (for apprenticeable jobs only);

c. In-plant training (given by an employer in the form of organized classroom study);

d. On-the-job training (serving as learner or trainee on the job under the instruction of a qualified worker);

e. Essential experience in other jobs (serving in less responsible jobs which lead to the higher grade job or serving in other jobs which qualify).

GUIDANCE

Raymond C. Hummel*

VOCATION, EDUCATION, AND GUIDANCE

A View of Guidance

European educators have been sometimes dismayed at the loose organization and seeming inefficiency of the procedures by which American young people are guided into work and into other adult roles. Administrators in European schools have had considerable authority to prescribe whether a person may continue his education, or enter one career line as against another. They are often puzzled that we in America grant immature young people so much control over such important decisions. Impressed by our advances in technology, especially in our techniques for psychological measurement, they wonder why we do not simply assess each youngster and prescribe what kinds of training and work would be most suitable for him.

One might answer that our techniques for assessing the educational and work potential of a human being either are not yet or never will be efficient enough to prescribe what career, in a complex industrial system, he ought to pursue. But this would miss a main premise of guidance in American education, namely, that no matter how efficiently we learn to assess human talents, the responsibility for choosing how to employ his talents rests ultimately with each person. This premise is consistent with our democratic values for freedom of choice and equality of opportunity. But it has more to recommend it. In the long run, a "non-prescriptive" guidance is likely to result in more efficient distribution of our manpower and in higher worker productivity, than are authoritarian methods. People who have been encouraged to plan their own careers are likely to employ their talents more purposefully than persons who are directed to conform to the expectations of others, no matter how expert.

Guidance begins with an individual's freedom and responsibility to make decisions. The need for guidance becomes critical when a person must choose, with only minimal information and experience, among a great number of vague alternatives. This is the condition under which most young people currently decide about their education, their work, and their future life in general. Guidance is a process in which a qualified person assists another to appraise his personal resources and limitations, to make decisions appropriate with such appraisal and to assume responsibility for acting on his decisions. Guidance is not merely "doing things" for students, such as informing them about the school program or processing college applications, or finding them jobs. Its more essential function is developmental and educative. Through guidance, a student is helped not only to deal with immediate problems, but to understand more deeply who he is and what he might become; through guidance, he strengthens his capacity to make and to act on his own decisions; through guidance, he learns to guide himself.

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The guidance counselor offers help without prescription. He provides information and suggests various courses of action a counselee ought to do, preferring to help him to clarify his own values, even when the counselee remains uncomfortably vague and indecisive about them. In this respect, the guidance counselor is different from parents, teachers, and administrators. The latter also provide guidance, to the extent that they assist a student to define for himself what he wants and how he might act to achieve it. To accomplish their educational aims with a student, however, they will often need to prescribe how he ought to work and to conduct himself. In doing so, parents, teachers, and administrators inevitably limit the student's freedom to act at his own choosing. The guidance counselor complements their efforts, in part, by helping the student to assess the consequences of acting one way or another in response to their standards.

Guidance, despite the counselor's efforts to be permissive and understanding, is not necessarily a comforting experience. The guidance counselor often may be the first adult with whom a student relates who will not judge or advise or discipline or make a decision for him. By bringing a student to confront the uncertainty and risk of errors which accompany all significant life decisions, guidance can contribute uniquely to his growth toward independent, self-responsible adulthood.

Guidance versus Personnel Functions

To help clarify the meaning of guidance and the role of the guidance counselor in the educational process, it might be useful to distinguish between guidance and personnel functions.

As suggested above, guidance serves the student's need to make decisions. Guidance thus starts not with the counselor but with the individual's responsibility and efforts to guide himself. Essentially, the counselor joins the student as collaborator in these efforts. Guidance is thus, ideally, "self-guidance." Personnel actions, however (and instructional decisions by teachers) begin with the responsibility of the school to teach and to assess the student's behavior in accord with the rules and standards acceptable to some common authority. In the guidance process, the student appraises a situation and chooses and plans what he considers to be the most appropriate actions. A student's election of a certain course or his decision to apply to a certain school or job, for example, are guidance decisions. But the action of admitting a student to a course or to a school, or employing him, involves personnel decisions.

Personnel decisions are determined by the purposes and rules of the institution; they are comparable with those made by a personnel administrator in industrial or other institutions. Personnel actions, for example, may either permit or prevent a student from taking a certain course, or lead to a referral of a child for diagnostic testing or remedial help, or are involved when a teacher gives a student a grade, or when an administrator or counselor writes a recommendation to a college admissions committee evaluating the student's work and character. Through such personnel actions, the school may meet the best interests of the student; but its judgment of what is best is based on its defined responsibilities to parents, to other institutions, and to the community in general. Guidance serves the community indirectly, through helping each student learn to make, in the most informed, responsible way possible, his judgments of what is best to do.

Most school counselors carry out a mixture of guidance and personnel functions. Educators disagree whether such mixture is desirable. A counselor's personnel responsibilities may contradict his offer to the student of a permissive, confidential, non-judgmental relationship. Personnel actions often require the practitioner to control and to prescribe a student's conduct and to report his evaluations of the student to such agencies as college admissions committees. If the counselor does this, he becomes for the student another possible source of rewards and penalties, another adult to be "won over." The student may then be unable to use the counselor for a candid, realistic study of his own needs and interests.

The Meaning of Vocation and Career

The early vocational guidance literature (The movement officially began about 1908) promoted the search for "one's true vocation." This focus on individuality was complemented by respect for the "occupational multi-potentiality" of each individual. The enormous reshaping of our occupational structure during the past decades, however, has increasingly eroded the meaning of spiritual calling in the term vocation. The modern secular version of serving God is found currently in the American obsession for self-fulfillment.

We now wonder whether it is possible for more than a minor fraction of our labor force to find in work a sense of vocation or an avenue to self-fulfillment. In fact, as Katz suggests, the alternatives of work either as vocation, as occupation, or as a kind of undifferentiated "employment" may themselves be deliberately chosen by an individual as part of his career development.

The semantic distinction of interest here concerns the meaning of vocation in vocational education. The social reformers who generated both the vocational guidance and vocational education movements probably shared the nineteenth-century view of vocation as a calling and as a means to self-fulfillment. But vocation in vocational education seems to have been more narrowly defined in terms of trades. The Smith-Hughes Act, as Cremin (1965) notes, officially confirmed this craft-orientation. Recent changes in manpower policy, particularly the Vocational Education Act of 1963, have tended to loosen the definition to include the wide range of occupations requiring skills obtainable at less than college-degree level. Teachers in vocational education, however, are likely to continue to define vocation in terms of the standards and qualifications of specific occupations.

The Vocational Guidance Association is now seriously trying to "reconceptualize" its mission and content of its work. It has tended in recent years to orient itself more broadly to the notion of career and to orient its services to career development. Everett Hughes suggests an appropriate meaning:

> . . . Career, in the most generic sense, refers to the fate of a man running his life cycle in a particular society at a particular time . . . . The career includes not only the processes and sequences of learning the techniques of the occupation but also the progressive perception of the whole system and of one's relation to it.

Such an orientation involves vocational guidance with a range of choice situations which extend far beyond those directly associated with work. Work will continue to be one of the major settings in which an individual identifies himself and comes to terms with his society. But the work orientation and training provided by a vocational educational curriculum is only one aspect of the career development process with which guidance is concerned.

Occupational Matching versus Career Development

Vocational guidance was born in the same era that spawned psychological testing. It was not long before vocational guidance, unfortunately, became construed as almost synonymous with measuring and profiling and matching of psychological characteristics with occupational demands. Counselor prescriptions in such "test 'em and tell 'em" vocational counseling often ludicrously violated common sense. Such procedures often ignored the wide error variance in the tests, the uncertainties in describing and classifying occupations, and the multitude of contigencies which might influence the career potentials of any one individual.

In part, the career development strategy in guidance is an antidote to a simple pseudo-scientific distortion of prediction in psychological measurement. As suggested in the first section, however, even if the errors in prediction were only modest, occupational choice and career development are ultimately matters of individual adaptation, nor prior judgment and prescription. Psychological measurement and prediction, however, can be important tools in guidance. The computer measurement model proposed by Cooley and developed by Cooley and Lohnes is a most promising application of a prediction strategy. Cooley and Lohnes have computed probabilities, using follow-up data, of persons with certain Project Talent test profiles being in certain career lines at a time one to five years later. An individual can be told the likelihood of his test profile resembling the profiles of individuals who at a later period are pursuing certain career lines. Interpreted properly, the probabilities are seen by the individual as simply a clearer definition of risks associated with various courses of action. He is still free to choose, if he wishes to make the risk, a low probability career path.

Career Guidance versus Manpower Development

The distinction here is analogous to that between personnel and guidance functions. At some level of abstraction, the goals of manpower development are similar to those of career guidance. At the level of contact between the counselor and his client, however, the counselor's efforts to serve the interests of manpower development might frequently -- or even inevitably -- contradict his guidance role. Government agencies, industry, professional societies, and other special interest groups have attempted to make the guidance counselor their ally in improving the supply of trained manpower in certain fields.

The National Defense Education Act, for example, initially provided support to increase the ratio of talented youngsters who went to college and who would major in science and technology. In its early support and training of school counselors, the NDEA specified that these counselors were being trained to improve the selection and motivation of talented youth. When Michael Harrington discovered poverty in 1962 and when we validated the need for middle-level technical manpower in the Vocational Education Act of 1963, other special roles for counselors in the manpower development area were defined. Public policy in support of counselor education has only gradually come to support the training of practioners to work with "all the people" for all the occupations.

My analogy may be vague but I shall pursue it anyway. Ideally, each individual should have equal access to valid information about the widest possible range of career lines. The counselor is responsible to help the individual achieve access to valid information, understand relevant facts, and to examine the implications of the facts for their own career development. To the degree that counselors would promote information about certain career lines as against others -- others which might be equally suitable for an individual -- they would inevitably contradict their effort to maximize the individual's freedom of information and choice.

Ironically, much of the support for guidance in government, industry, and professional societies is directed to the counselor as a presumed "social engineer." But the strategy of social engineering is in contradiction to the theory of guidance counseling adumbrated in earlier sections. It presumes that someone in our society has the knowledge and virtue to decide which occupations are more important than others. Economists can refer to criteria of efficiency; and legislators have the power to decide which priorities to support. If the counselor acts as their agent to promote priorities, however, he inevitably compromises his contract of permissive collaboration with the counselee. Suppose counselors, to caricature a social engineering strategy, decide that in this age of affluence we need ski instructors and croupiers more than we need physicians and technicians. What value norms, other than their professional commitment to permissive exploration and free choice, would they contradict in recruiting individuals to these occupations? As a consequence of inadequate training and role confusion among counselors much bootlegging of prejudiced educational and occupational information is carried on in American schools. The bootlegging has especially favored college aspirations and downgraded vocational-technical education. The only request that counselors can legitimately honor is to give vocational-technical education equal rights with other alternatives.

Guidance as a Co-Curriculum in Vocational Education

Guidance is ineffective in a vacuum. It can only complement other efforts to inform students about the world and about themselves. In part, the inadequate vocational guidance schools afford students is related to the lack of facilities and programs for occupational exploration and for the development of suitable occupational skills while in high school. This inadequacy is felt particularly by those students who will not go on to a four-year college. We cannot even be confident that the choices by typically fifty percent of our high school graduates to enter college are reasoned and informed. The evidence of college dropout and of alienation among some of our ablest college students raises doubts about the effectiveness of their instruction and guidance during the school years.

College affords students a moratorium; they can postpone significant choices. The youth who do not attend our-year colleges, however, need a wide occupational array of exploration and training opportunities during high school. Regrettably there is no time to exemplify some of the arrangements for industrial arts and vocational and technical courses which might be programmed from K-12. From a guidance point of view, and from evidence that only a minority of high school graduates who have pursued vocational education programs actually enter jobs in their specific field, the critical contribution of vocational education is seen to provide exposure, exploration, tryout and the experience of learning some valued skills and of producing a finished product. All we know of vocational development and their readiness for decision-making as well as of the changing job opportunities, militate against the traditional training for an immediately salable skill in a specific trade.

Attached is a brief outline of the "CIGS" program we have been trying out in the Learning Research and Development Center. We have already completed the pilot efforts with samples of students in a suburban community and a semi-rural community. We are currently in the middle of a tryout in a large, all Negro ghetto high school. The program is intended to be a co-curriculum to complement the general education and OVT curricula.

The students, at least, have been most enthusiastic about the program. We are not certain yet what effects we will have on their long-term orientation to school and work. But we are convinced that for students in all three kinds of schools, but especially for the non-college bound who cannot afford a moratorium on decision-making, the regular curriculum is hopelessly inadequate. The CIGS program is not a substitute for an adequate curriculum; but even an adequate course of instruction will be insufficient unless it gives students a chance to clarify the alternatives among which they must either choose or renege as they progress through secondary school.

In the current program in the all-Negro school we are painfully aware of the inadequacy of a program which helps to clarify values and may raise aspirations and yet ignore their awful deficiencies in the basic subject areas. The students realize that discussion of serious occupational objectives is artificial if they lack the ability to read and compute effectively. The traditional high school has been unable to help them "catch up." The teachers are often as resigned as the students; where they are interested they lack the materials to do remedial elementary school work with their students. Perhaps more basic, they lack the materials to diagnose and correct the problems which differ somewhat for each individual student.

Another of our projects in the Learning Research and Development Center is to apply an Individually Prescribed Instruction Program in mathematics and reading to slow learners in the junior high school. We will be moving to the senior high school in a year or two. The IPI provides a school with diagnostic instruments, self-teaching work-sheets, and student evaluation materials to work on those particular areas where he needs instruction. It uses carefully devised placement tests to help identify these areas. The student then works at his own pace until the skill in each unit has reached a certain level of mastery as shown on the post-test. We hope gradually to try to develop some correlation between the CIGS program, the regular curriculum, and skills development in math and reading as necessary. It has been evident that even in this high school with a well-developed OVT curriculum, a great number of students cannot profit because of deficiencies in the fundamental skills of reading and arithmetic.

Summary

I must forego a summary; there is still more to be added to and much to be edited from these notes. Essentially, guidance is construed as a developmental process which complements both the general education and vocational education curricula.

Guidance is distinct in its principle of permissive, non-prescriptive collaboration. Guidance will have little consequence for most students if they fail to find the curriculum to be currently rewarding and a meaningful prelude to adult living. Occupational and vocational education are necessary aspects of a meaningful curriculum for most students. But this will need to be supplemented for some students by specific remediation in skill subjects. The key problem is coordination and complementation, with guidance as important as any other element. This brings us to a problem with which we might well have started. That is the problem of innovating complex programs in institutions that seem to prefer simplicity, familiarity, and order. Guidance and vocational education are both interesting cases of the larger problem of institutional change in education.

William C. Kvaraceus*

REACTION

Accepting the major premise that "through guidance he (the student) learns to guide himself," we must ask: "What freedom and responsibility to make decisions is to be found in most vocational-technical schools in Massachusetts? If most of these schools tell a student what to do, when to do it, how to do it, and whether it is done "right" -- thus limiting freedom to act at his own choosing -- "guidance for self-guidance" will not take place in spite of the existence of one or two counselors on the school staff. Vocational-technical schools, and any other schools for that matter, must be so planned and managed as to allow sufficient freedom and opportunity for decision making thus providing the right climate for guidance. This kind of learning environment cannot be taken for granted. The kind of guidance process that is described in this paper would have a hard time enduring the external controls and authoritative decision-making characteristics of most school systems in the Commonwealth.

The report skirts the major question: Who or what is a guidance worker? To say that "Guidance is a process in which a qualified person assists another, etc . . ." is not to answer the question. We need to be told what makes a guidance worker qualified. There are many counselors on the job in many vocational schools. What makes one counselor more qualified than another? Whom do we hire in the line of applicants seeking positions in the vocational schools? Where do we go for applicants? Counselors can be procured from psychology departments, education departments, and schools of social work. We need criteria to be able to spot a qualified counselor and to be able to tell a "good one" from a "poor one." Classroom teachers who manage to get credits in the guidance field, who meet state requirements, and who are hired to serve as counselors in vocational-technical schools now occupy these posts. We have no way of knowing whether they are really qualified to do the job as envisioned in this paper.

Most guidance workers fall into the trap of the omnibus worker. They readily take on any old task handed to them. They become the school waste basket. In the formal work structure of the vocational school we need to have a job description that spells out the unique role and function of guidance personnel. Too often the nature of the job accommodates to the existence of other personnel such as vice-principal, clinical psychologist, psychometrist, social worker, visiting teacher, and adjustment counselor. What the counselor does or does not do is often more a response to who else is around rather than to any specification of the unique role and function of the position to be filled. We need to clarify further the training, background, traits, and skills that make a person "qualified" for this role in a vocational-technical school. It must be recognized that the requirements in this type of school may differ from those in a comprehensive or general high school.

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The distinction that is pressed between "personnel actions" and "guidance" is taken well psychologically but this remains only an academic distinction. On-the-job demands will force the guidance worker to step over the line frequently. It is doubtful whether the counselor could maintain himself long in a vocational school playing out the neutral role. It is essential, however, that the counselor play out the advocacy role in behalf of the student. Who else will stand as friend in court for the student when he is in difficulty because of long hair, vandalism, cheating, disturbing the classroom peace, or use of pot?

The issue of vocation and careers bypasses the importance of the ethos or ethic of work. Vocational guidance does not come through strong enough in the Freudian sense of the good life, "love and work," nor even in the Soviet tradition of the dignity and morality of labor. These should be among the major objectives of vocational guidance.

The points on occupational matching vs career development are taken well, but they do not take us far enough in resolving the pressures of reality on the vocational education staff who must accommodate to the changing job market and who must continue to define vocation in job placement terms involving standards and qualifications of specific jobs in an efficiency-minded and a profit-oriented industrial society. How much of this dilemma can be resolved by working closer within the commercial and industrial system remains a curriculum problem. Perhaps vocational and technical education in a place called school set apart from the industrial establishment is now an impractical arrangement. The implications for vocational guidance are obvious.

The author cogently suggests that work orientation and training are but one aspect of the career development process with which guidance is concerned. If we consider why persons leave or lose their jobs and what psychological and social satisfactions can accrue through work effort the importance of this observation needs to be underscored. We need to press the point that vocational guidance is not "a separate and distinct kind of guidance" but rather a phase of a many faceted operation that includes health, social, emotional, and intellectual aspects. There is always the danger that the vocational and technical schools will settle for something called vocational guidance. Like any other school, perhaps even more than any other school, the vocational-technical schools need to maintain and safeguard a comprehensive guidance program.

In facing the college-aspiration and downgrading of vocational-technical education, so much in evidence in school and society, the usual guidance trick is to welch on the side of neutrality and "freedom to make decision." But very few people are liberated enough from their personal-social environment to be able to consider alternatives and to make choices. We need to define freedom. The freedom of the disadvantaged child in the inner city or in the rural slums is akin to solitary confinement. The passive, neutral, and nonjudgmental counselor may need to intervene more actively -- if not aggressively -- lest these youngsters foreclose on themselves by setting a low ceiling on their career aspiration. More and more the counselor may need to work to insure that able youngsters whose frustration, defeat, apathy, and hopelessness may so paralyze them as to limit their freedom of choice. It may take a lot of convincing to insure the oppressed that certain jobs and vocations can be achieved. The ethics and morality of letting these youngsters make no decision or the wrong decision need to be faced. Furthermore, the lower-class youngsters may not accommodate to the middle-class style of decision making as played out by middle-class counselors. This is a debatable issue but one which no longer can be avoided in the current school and street crisis.

The counselor's dependency on adequate curriculum is obvious. If "the regular curriculum is hopelessly inadequate," as the author suggests, guidance personnel will not be able to do much more than help the youngster to make the best of a bad situation. Staying happy in an unhappy school situation can neither be the aim nor the compromise of guidance. Some of the efforts of knowledgeable counselors should be directed to improving the curriculum. Counselors more than anyone else know the "soft spots" in the program but their knowledge is seldom tapped to remedy the school situation. Usually the guidance personnel play it close to their vests. The accumulation of their insights gained through helping all children should be shared with all school staff without jeopardizing individual confidences. Until and unless the curriculum problem is solved, the goals of guidance will hardly be achieved. As the author intimates, guiding is not always a comforting experience; under these circumstances he could have said it is a downright frustrating experience.

With few counselors and many students to be counseled, some with severe problems, implicit in the one-to-one guidance program is a limiting and perhaps unrealistic assumption. This route will only continue to serve a small number of students. More attention needs to be given to various forms of group guidance and to working with students through their teachers by means of "classroom or shop guidance." Hopefully by working with groups and through teachers, the outnumbered personnel workers may meet the needs of a greater number of students.

In guiding youngsters with special or severe problems and in aiming and helping the student "to know himself" we must face the issue of task and time more squarely. The notion of helping youngsters to understand themselves -- a couch or a life task at least -- or to solve what are often long-term, deep, and complex personal-social problems via a short series of weekly sessions borders on professional romanticism if not magic. Many counselors today and perhaps the whole profession, suffer from an overly-slick professionalism which is reflected somewhat in the paper. There are some cases that obviously will fall outside the competencies of individual counselors. It is not clear how the counselor recognizes these cases nor what he can do about them. On the other hand, we do know that many youngsters with problems can be helped by untrained persons working on the "helper principle." Looking on the resources of the vocational-technical school, particularly the teaching staff and the older students and apprentices, we should not overlook this rich source of guidance in the classroom. Operating on the helper principle, so well demonstrated by The AA and its many facsimilies and more recently by the use of indigenous workers in the inner-city programs, much can be accomplished to guide more youngsters by "lay counselors" under the supervision of the trained counselor. Guidance personnel might profitably direct more of their effort toward teaching staff and older students to enable them to guide others in their daily and intimate contacts in the classroom. Guidance people have clearly demonstrated the limits of their reach.

In conclusion we must recognize that their is little likelihood that current ratios of students to counselor will not be appreciable reduced. Yet it is significant that adding another counselor or two was one of the steps most frequently taken by schools under Titles II and III of the Elementary and Secondary Education Act. What these programs (and this paper) do not do is ask the question: Why did we need one in the first place? Answers to this question may bring us closer to the antecedents of the guidance problems that beset every vocational-technical school in the Commonwealth of Massachusetts.

CURRICULUM

Benjamin Shimberg*

VOCATIONAL EDUCATION: IS IT MORE THAN EDUCATION FOR A VOCATION?

To borrow a phrase from Dickens, we might say that for vocational education, this is the "best of times and the worst of times."

Never before have so many people in every segment of our society agreed so fully on the need to strengthen and improve vocational education. A high note was sounded in 1963 by President Kennedy's blue ribbon panel of consultants when it called for a massive upgrading of Vocational Education. Even before that report was published, Congress had begun drafting the Vocational Education Act of 1963, pouring something in the order of $175,000,000 into the arteries of the vocational education system. This massive infusion was only the beginning; states were stimulated to increase their own contributions -- so that the total expenditures for vocational education reached unprecedented heights.

NOT EVERYONE GOES TO COLLEGE

Although most Americans had dimly realized that not everyone goes to college, the Report of the President's Panel (14), headed by Ben Willis, Superintendent of the Chicago Public Schools, dramatized the disparity between the dream and the reality. The report noted that out of every ten students who enter the ninth grade, only seven will finish high school; of those who do finish high school . . . only four will enter a four year college; and of these, only two will complete the four year program and receive a bachelor's degree.

Educators, businessmen, government leaders, manpower specialists, and union officials have been increasingly concerned with the needs of the eight out of ten youngsters who do not go on to college. The War on Poverty has also underscored the need for improved vocational programs. As millions of dollars have been poured into the Job Corps, MDTA, National Youth Corps, and similar programs, many thoughtful Americans have realized that these vastly expensive efforts were the price of neglect. The boys and girls in Job Corp Centers and at MDTA Skills Centers were the products of schools which had neglected not only their vocational development, but (even worse) had failed to provide them with the basic skills on which subsequent occupational training could be based.

This great awakening -- this unprecedented display of support -- should have been an exhilarating experience for vocational educators. After decades of second class citizenship, after years of suffering the indignities of being regarded as a dumping ground for academic misfits and youngsters with behavior problems, vocational education had gained recognition as a vital part of American education and of our technological society.

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TRADITIONAL GOALS AND VALUES QUESTIONED

But alas, this new era of relative affluence proved to be no Eden. Even in the "best of times" there was dissension and discord. Questions were raised regarding the traditional goals, values, structure, and practices of vocational education: Could the craft-oriented approach, devised a half century ago, meet the needs of the sixties and seventies? Why had vocational education perseverated in its support of agricultural programs in the face of the growing demand for training in technology and the service occupations? Was secondary school the appropriate place for vocational education? Should emphasis in high school be placed on basic education and occupational exploration? Should the separate vocational school be abolished in favor of the comprehensive high school? Were the experience requirements for vocational teachers too restrictive?

As these and other differences were aired, it became evident that anyone charged with responsibility for planning a curriculum or creating facilities for vocational education, would have to resolve a host of philosophical as well as practical questions before he could design a program to meet the needs of the young people who would be moving through our schools during decades to come.

PLANNING FOR A SOCIETY IN FLUX

Planning and decision-making were further complicated by our need to make assumptions about the kind of world in which we would be living. In our time we have seen phenomenal changes take place. If anything, the pace of change has been accelerated. During the greater part of our history, a majority of Americans lived in rural areas. Today we are a predominately urban society. At one time we had a frontier where those who didn't like schools, or city life, or the restraints of society, could repair to carve out a new life. Until quite recently, our industries had jobs for the unskilled. The dropouts and push-outs of our educational system had little difficulty finding work. Since World War II that situation has changed drastically. The demand for unskilled labor has dropped precipitously, giving rise to a crisis which we are just now beginning to face.

In all likelihood we could have coped with that crisis, had not the situation been greatly aggravated by the cybernetic revolution. The computer started out as a gadget that could count with incredible speed; so we used it to do the work of clerks. Then it acquired a memory. We hooked it up to machines capable of making fine sensory discriminations and found that we could operate assembly lines with fewer people -- or no people at all. Machines could be programmed to turn out engine blocks and machine tools untouched by human hands. Skilled craftsman -- such as journeyman machinists -- found that computer linked machine tools could wipe out their jobs overnight. Even middle management people discovered, to their dismay, that anything they could do, the machine could (often) do better.

Manpower forecasts hold little hope for the unskilled or the uneducated. During the decade of the 70's, the demand for laborers and for semi-skilled operatives is expected to decline relative to the total labor force. The fastest growing occupational group will be the professional, technical, and kindred workers -- as it has been since World War II. Service workers (such as policemen, beauticians, and hospital personnel) will show above average growth, as will clerical workers -- despite the increases in automation. The demand for craftsmen, sales workers and managerial personnel will remain roughly at their present relative levels.

SIX OR SEVEN JOB CHANGES

Are educational planners fully aware of the implications of these forces? What are they doing to prepare young people to cope with the profound changes they are certain to encounter during their lifetime? What is their response to Manpower Administrator Stanley Ruttenberg's prediction that the average 20 year old man in the work force today can be expected to change jobs six or seven times during his remaining working life (12). Dr. Ruttenberg has stated that ". . . it is no longer enough to train a young person for a specific job. We must provide him with a sound general education which will equip him to cope with change and enable him to acquire new skills as often as may be necessary."

It is within this framework that curriculum planning must take place. However, we cannot indulge in the luxury of ignoring the present, while we prepare a grandiose blueprint for the future. We must consider where we are now and what short run changes are needed to equip our young people to cope with the world in which they will live. But anything we attempt as a short run solution, should not detract from the infinitely more difficult and more basic task of designing new programs which will transform our schools into institutions capable of preparing boys and girls to live in a complex technological society. And while we are at it, we should not lose sight of the fact that technology will bring with it more leisure for more people that we have ever known before. Education must prepare young people to use this leisure wisely and creatively. In many ways this may be a greater challenge than preparing youth to cope with technological change.

In considering the design of a sound program of vocational education, we need to think about at least three interrelated problems:

1. How can we make sure that every student receives the basic education necessary for occupational preparation?

2. How can we provide each youngster with the information and experiences that he needs in order to make intelligent decisions about his life's work?

3. How can we provide occupational education that is appropriate to the needs, interests, and abilities of young people so that they can enter gainful employment, progress on the job, and cope with changing technology effectively?

Since these problems are so closely related, it is impossible to deal with them separately. Yet, it may be helpful if we at least try to look at them one at a time. The first question asked: "How can we make sure that every student receives the basic education necessary for occupational preparation?"

For many years the obvious answer seemed to be "Keep him in school." Unfortunately, there is mounting evidence that merely attending school does not guarantee that learning will take place. A common complaint of educators in area vocational schools, community colleges, Job Corp centers, and MDTA Programs is than an alarmingly high percentage of students lack the basic skills needed to undertake occupational training. Most of the students have been in school for ten years or more, but seem to have learned little. This has given rise to many questions about the effectiveness of our educational system, especially for students who are not academically inclined.

There is growing awareness of the need for a greater flexibility in education to accommodate students with different learning styles. Some students seem to have the ability to learn material presented abstractly -- in the form of words and symbols. These are the youngsters who show up well on scholastic aptitude tests and who generally get good grades in school. There are other youngsters who do poorly on such tests and who tend to have difficulty dealing with abstractions. This latter group often finds school an ordeal, since they lack the qualities which make for academic success. One can hardly blame these students for wanting to leave school. They learn from experience that each day in school is likely to expose them to new failures and fresh humiliation. Professor E. B. Skinner, a psychologist at Harvard, characterized such students as "tune outs." He has observed that after a while they merely go through the motions of learning; they stop listening, and make little or no effort to achieve.

AN EXPERIENCE-CENTERED CURRICULUM

While many educators have advocated an experience-centered curriculum, few schools have implemented this concept in an effective manner. One such effort that has attracted wide attention is the Pre-Technology Program, which was originated in Richmond, California and which has since been adopted in other areas. The core of the program is a shop-laboratory in which high school students are given an opportunity to work on technological problems similar to those encountered in industry. The projects are carefully selected by a team of teachers, which includes -- in addition to the technology instructor -- a science teacher, a mathematics teacher, an English teacher, and a guidance counselor. In order for the student to complete the technology project, he must usually acquire new scientific understandings or relate previously learned principles in new ways. These may require him to master relevant mathematical concepts or to develop certain computational skills. The preparation of oral and written reports related to the projects serve to enhance his communication skills. In short, the student learns that academic subjects are not as useless as they may have seemed. Moreover, he begins to glimpse the interrelatedness of knowledge and the value of theory as an aid to problem solving.

This core-curriculum, team-teaching approach is not really new. Its success seems to hinge on the fact that the problems being used are sufficiently challenging to capture the interest of students who have heretofore been unmotivated with respect to school achievement. The boys who participated in the development phase of the Richmond Project are supposed to have been students of above average ability who were failing two or more academic subjects. Most of them had been tagged as "behavior problems."

According to reports emanting from the Richmond Program, these students responded enthusiastically to the new curriculum. Attitudes changed dramatically. As academic subjects acquired relevance, achievement improved. Most of the students not only finished high school, but many went on to the technical program at the junior college. Some of those who did not go on to colledge, sought employment in industries which would provide them with an opportunity to gain further training in technology.

A companion program for high school students of somewhat lower ability has been underway for several years in the San Francisco Bay area. Known as FEAST (Foods Education and Service Training), this program utilizes problems and projects related to the food and restaurant industry as a vehicle for making academic subjects more meaningful. It too has had considerable success in changing attitude and improving academic achievement. Many of the youngsters later seek employment in the hotel and food service industry; some go on to post secondary education to prepare for careers in management.

Neither of these projects claims to be providing vocational education in the sense of preparing students for entry jobs. The vocational content is merely the vehicle through which basic education is facilitated. In the process, of course, an individual does learn about his abilities and interests. The success experiences may also help him to form a more positive self-concept. He acquires information about careers and post secondary educational opportunities he might never have heard about otherwise.

The Pre-Technology Project and Project FEAST serve as graphic demonstrations that many of the students who are unresponsive to traditional education, can be "turned on" by an experience-centered curriculum. Professor Ned Frank of MIT and Drs. Bushnell and Morgan of the U.S. Office of Education in separate proposals have called for a major overhaul of the present educational structure. They recognize that students differ in their learning styles, and that sufficient flexibility must be provided in the curriculum to permit all students to have experiences that not only enhance their learning, but also further their vocational development. It will require a massive effort on the part of the educational community to bring about the far-reaching changes that have been proposed. Unfortunately their very scope and magnitude may discourage serious efforts at implementation.

COMPUTER ASSISTED INSTRUCTION

A major effort is underway to provide more individualized instruction to students with the aid of computers. Dr. John Flanagan recently described one such project in an article entitled "Functional Education for the Seventies" (4). The project known as CREATE is a joint undertaking of the American Institute for Research in the Behavioral Sciences and the Westinghouse Learning Corporation. The Quincy, Massachusetts schools are one of the fourteen school systems participating.

The AIR-Westinghouse approach attemps to tailor instruction of elementary and secondary school children to the needs of each individual. The system makes use of specially designed learning activities to which the student has access via computer. Also stored in the computer is detailed information on each child, including his special aptitudes, patterns of learning, interests and background. In addition, a record is kept of the skills and knowledge he has acquired prior to reaching any given decision point.

When a student, with the help of his teacher, has decided on a learning objective, the computer determines which of the various "Teaching-learning units" stored in its memory is best suited to the learning style of this particular student. The teaching-learning units are indexed in terms of what a student is expected to learn, what the prerequisites are, and for what type of student and situation this unit is especially well suited.

One of the key features of the system, according to Flanagan, is the continuous monitoring of progress. In describing the type of tests that will be used, Flanagan states that "The system is based on the 'success principle'. It is intended that each student be assigned only objectives which he can achieve at his present stage of development or learning in each field and that he be assisted in selecting from the different types of teaching-learning units one which is well suited to his learning style so as to enable him to attain the objective within the prescribed period of time. Failure on a unit test represents a breakdown in the system and will be the source of immediate investigation to remedy the observed deficiency."

It is too early to tell how successful Dr. Flanagan and his associates will be in individualizing instruction with the help of computers. However, there can be no doubt that this is but one of many serious efforts now underway to introduce changes in our educational system. Those of us who are concerned with quality vocational education need to follow all these efforts closely and to support those which seem to hold special promise. It is my conviction that anything that will make the general learning environment more favorable to the occupationally-oriented student, will be of direct benefit to vocational education. Indeed, it has been suggested that for most students specific vocational education should be deferred as long as possible in order to provide each student with as much preparation in the basic tool subjects as he can assimilate. This foundation will serve him well not only during his initial vocational program, but in subsequent years, when he will need to renew himself in order to keep abreast of technological change.

HELP IN DECISION MAKING

Although we have stressed the importance of basic education, we have also recognized that such education, by itself, will not provide the competencies required for career planning. This has prompted us to ask, "How can we provide each youngster with the information and experiences he needs in order to make intelligent decisions about his life's work?"

Leaders in guidance are beginning to realize that if a student is to make meaningful educational or vocational plans, the groundwork needs to be laid long before he reaches any one of several decision points. Until recently, most guidance activity has been centered in the senior high school because that was where students made obvious decisions about going to college or taking a job. Then, as the significance of earlier decisions was perceived, guidance activity at the junior high school level was strengthened. Counselors in many schools are now striving to help eighth and ninth graders to become actively involved in the decision-making process. They are seeking to give students a better understanding of their abilities, interests, and values; to inform them about educational and vocational opportunities that lie ahead and to point out how decisions made at one choice point can influence the decisions at subsequent points.

A pioneering effort in this respect was the work of Dr. Martin Katz who sought to implement career development theory through a group guidance process utilizing a work-text called You: Today and Tomorrow. Some of Dr. Katz's ideas have been adopted and expanded by the Palo Alto (California) schools where junior high youngsters now receive considerable help in understanding how their test scores and school grades are related to success in different types of educational programs and in various jobs.

The Palo Alto schools are also experimenting with the idea of "miniaturized work experiences" to bridge the gap between the more obvious jobs and jobs where the product or service may be less tangible. To give a youngster some idea of what an accountant does, the miniaturized experience presents him with a problem: a businessman suspects that an employee may be embezzling funds. Various ledgers are reproduced in a booklet, along with a packet of invoices, receipts, checks, vouchers, etc. The student is given directions on how to proceed and what to look for. Before he is through he has a much better concept of accounting than any amount of verbalization could have provided; he has actually experienced, in a small way, the mental as well as the physical processes of this occupation.

INTRODUCTION TO VOCATIONS

There are a number of states which are seeking to stimulate vocational development through innovative programs at the junior high level. In New Jersey such a program is called "Introduction to Vocations." The aim of the program is to create job-awareness rather than skills. Each participating school has a group of local business men serving on its advisory committee. They are able to open doors for field trips that would normally be closed to students.

The program is arranged in cycles of about three weeks duration to include work skills in wood shop, metal shop, graphics, mechanical drawing, auto and power mechanics, foods, clothing, laboratory techniques, business education, and health services. Class work is supplemented by speakers from related work areas: field trips to business and industry, hospitals and service agencies; and a "puppy dog program." Under the "puppy dog program", a student is given an opportunity to follow some worker around for a day to see exactly what that person does. The program was started in 1965 with thirteen participating schools. This year there are fifty-six.

In the New York City schools, an experimental program is underway for selected ninth and tenth graders who are enrolled in the General Curriculum. Each year's work is broken into three broad areas -- business, health, and industrial technology. Students are cycled through each area twice, they are then encouraged to concentrate in one of these areas during their last two years in order to get specific vocational preparation, or to lay the ground work for further education after high school. As in the Richmond Plan and Project FEAST, the curriculum seeks to relate English, mathematics and science to each of the three areas, so that the needs of basic education and vocational exploration are being served simultaneously.

While these and similar efforts are indicative of a growing awareness of the need to provide experiences to enhance vocational development, there are some educators who maintain that by the time a youngster reaches junior high it is already too late to do much about the work attitudes and perceptions of self which are formed in the elementary grades.

VOCATIONAL DEVELOPMENT IN ELEMENTARY SCHOOLS

Dr. Edward Roeber (11) has recently observed that ". . . the elementary school years provide the critical beginnings in the formation of generalizations about self and environment." He maintains that if the ". . . elementary school environment is lacking in exposures to people, ideas, and things associated with industrial, business, service, and related processes elementary children might conceivably develop negative generalizations about those kind of human activities when they reach secondary school." He believes when high school counselors are accused of using vocational schools as a "dumping ground" for poor students, they are being made the scapegoat for years of sterility in the students' environment and for the neglect of their vocational development.

"Some vocational educators," says Dr. Roeber, "would like to believe that the counselor has the magic necessary to convert a student who dislikes activities associated with business and industry into a student who prefers vocational courses." He suggests that neither counselors nor anyone else is likely to have much success in modifying these attitudes in adolescence if contrary attitudes have become solidified in earlier years.

In years past there have been efforts to introduce units about the "world of work" into the social studies curriculum, Industrial Arts, and Home Economics. Unfortunately, these efforts have not met with much observable success. Increasingly, appeals are being heard that a greater effort should be made to implement career development theory in both the elementary and secondary schools.

In discussing the results of Project Talent, and other recent studies, Dr. John Flanagan (4) observed that, "Schools generally fail to assist the student in a) developing a sense of responsibility for his educational personal and social development and b) making realistic educational decisions and choices to prepare him for adult roles in which he will make full use of his talents." He observes, further, that "Recent evaluations indicate the need to broaden the focus of educational objectives in order to make planning and preparing for an appropriate occupational role an integral part of the education program . . . ."

In August 1966, the National Vocational Guidance Association sponsored a conference on "Implementing Career Development Theory and Research Through the Curriculum." (9) Participants in the conference included leaders from the field of curriculum as well as leaders in the field of guidance. Numerous suggestions were advanced for incorporating meaningful vocational experiences into the curriculum. These ranged from greater use of audio visual aids, field trips, and expanded work-study programs to miniaturized occupational experiences. There were appeals for more exchanges between industry and education and expanded pre-service and in-service programs in career development theory for teachers.

One gains the impression from reading the report that while there is a considerable amount of theorizing about vocational development and a limited amount of experimental work underway, well-developed approaches have not, as yet, been formulated or subjected to large scale try-out and evaluation. There seems to be a need for a clearer definition of the objectives of a career development program and better delineation of activities which can be carried out at various developmental levels.

FACTORY TOURS ARE NOT ENOUGH

Vocational educators have always recognized the need for early guidance.

Indeed, in many states guidance got its initial impetus out of funds made available under the Smith Hughes Act and the George Barden Act. Now it would seem that vocational educators have a further opportunity to work with guidance specialists and curriculum people to explore ways to implement the concept of career development. In doing so, they may find unexpected allies in the business world. Let me cite one example. At a vocational education conference in Philadelphia (13) in February 1966, Dr. Charles R. DeCarlo, Director of Automation Research for IBM, urged that ways be found to draw together local industries and school systems ". . . so that we guarantee a variety of work experiences without making a forced commitment on the part of the company to hire the person after he has had the experience." Elaborating on this thought, Dr. DeCarlo explained that it wasn't enough to take a class on a one day tour through a factory. He added, "That's all right, but we ought to have an arrangement where you could have work assignments; and I mean work assignment at relatively young ages -- adolescent or pre-adolescent -- where a child could spend some time -- maybe three or four days -- in a work environment to see what goes on." He added that involvement of this type by industry could not be expected as a matter of charity. However, he felt that the benefits derived by students would be well worth the cost.

It is encouraging to hear ideas supportive of career development coming from a representative of industry. It suggests that there may be a greater readiness-in some industries at least -- to explore ideas that would have been ridiculed as "blue sky" thinking, even a few years ago.

THE HOW, WHEN, AND WHERE OF VOCATIONAL EDUCATION

There are many other aspects of basic education and career development that need to be considered in curriculum planning, however to do so at this time would be at the expense of the third question: "How can we provide occupational education, appropriate to the needs, interests and abilities of young people, to prepare them to enter gainful employment, progress on the job, and cope effectively with changing technology?"

The foregoing question pursues the "How" of vocational education. It might have been more appropriate to ask, "When is the best time to provide vocational education?" and "What is the best administrative arrangement?" There is currently considerable controversey regarding the best level at which to provide vocational education. Historically, occupationally-oriented youngsters generally enrolled in vocational programs at the end of the eighth or ninth grade, they then devoted approximately half of each school day to the pursuit of occupational experience in a shop or farm "laboratory." The balance of the day was spent in general education, -- also, closely related to the content of the vocational courses.

Critics of vocational education at the secondary level feel that eighth and ninth graders are generally too immature to make decisions that are to a very large extent irreversible. They also question the wisdom of training young people for occupations which are likely to undergo drastic change because of advances in technology. However, their most basic criticism relates to the neglect of fundamentals in favor of skills training.

PEA STRESSES BASIC EDUCATION

The Public Education Association, a citizens' organization which undertakes studies and makes recommendations regarding public education in New York City, has been one of the more articulate critics of vocational education as it exists at the present time. They recommend that both the junior and senior high schools provide a comprehensive education program that will lay the foundation for the development of skills. To this end, the PEA would encourage students to defer specific vocational training until the twelfth grade, or preferably until after the student leaves high school. It is the PEA's view that workers trained in a single vocational skill, without the benefit of a broad program of general education, will have increasing difficulty adapting to the changing labor market. The job training available at the post secondary level is of more value (says PEA) than that which can be obtained in secondary schools even under optimum conditions.

At the same time, many educators recognize that it is unrealistic to think of deferring all vocational education to the post secondary period. They realize that for large numbers of students the traditional curriculum is unsuitable; and that for many of these students vocational education is appropriate education. They point to youngsters planning to drop out as soon as they reach school-leaving age and to youngsters who may stick it out until graduation, but who have no intention of going on to any type of formal post secondary education. It is obvious that for such youngsters some provision must be made for appropriate occupational education while they are still in the secondary school.

NEW YORK CITY BLUEPRINT

In 1965, the New York City schools developed a blueprint for dealing with this problem, but the plan was never implemented. Joseph Zack (15), the Acting Assistant Superintendent of Schools, states that the plan was devised to meet the criticism that the student entering a vocational school must commit himself too early. Accordingly, the following step-wise procedure was evolved: All students were to have exposure to industrial arts in the ninth grade. In the tenth year, those who were thinking of preparing for a skilled trade would be given exploratory courses in vocational shops to test the genuineness of their interests and to discover their aptitudes. It was felt that this approach would provide for a high degree of flexibility, permit opportunities for self-investigation (without commitment), and a chance to change direction should that seem desirable. If the vocational interest continued and developed a specific focus, the student would embark on a vocational program during his eleventh and twelfth years. In the event that the program a student desired was not available in his own school, he would be able to transfer to another school (within a larger secondary school complex) which offered training in the trade of his choice. In this way, he would be able to elect a program determined by interest and motivation rather than by the accidents of availability.

Mr. Zack states that, "The straight jacket of a daily four period shop sequence would be abandoned. The degree of concentration would be determined by the needs of the chosen trade and the learning ability of the student. Furthermore, the artificial marriage of general education and trade work would be ended. The English curriculum, for example, would be the same for all students except as modified in ability grouping or the usual elective offering. The same direction should be taken by the other disciplines, except where there are special needs in a trade area in which some subject might become part of the shop program."

TRAINING IN SEMI-SKILLED OCCUPATIONS

The proposed plan also provided for preparation in semi-skilled occupations. Mr. Zack states that a labor market study conducted by the Vocational Division of the New York City schools

> ". . . revealed a number of semi-skilled occupations for which there is high placement expectancy. Students could be qualified for these occupations through short unit courses which would not require extensive shop facilities. Preparation for these occupations could be offered to students who are approaching graduation without a specific educational goal. It would be especially suitable for the potential drop out, who might otherwise leave formal education unequipped for work and with no avenue for employment. Some of the trades are furniture finisher, floor tile

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> and linoleum setter, household appliance serviceman, shoe repairman, vari-typist, keypunch operator, fingerprint technician aide, recreation aide, photographer aide, audio-visual technician (projectionist), landscape aide (grounds, repair and gardening), and office machine operator."

Before post secondary opportunities were so readily available, a vocationally oriented student probably felt that he had to take whatever vocational training was offered at the secondary level since this might be his only opportunity to obtain skills training. Today, he knows that by taking basic courses, he leaves the door open for a variety of opportunities -- four-year engineering programs, two-year technical education programs, or skills-development programs -- after he leaves high school. He also realizes that his basic education will qualify him for an apprentice program or for on-the-job training in industry, whether or not he has had specific vocational education in high school.

SEPARATE FACILITY OR COMPREHENSIVE HIGH SCHOOL?

In an effort to promote one solution to vocational education, over alternative approaches, considerable controversy has developed between proponents of the comprehensive high school and advocates of the self-contained vocational school.

The comprehensive high school is viewed by many, including Dr. Conant, as the ideal American school. It was assumed that by offering vocational as well as academic subjects under one roof, all students would have ready access to both types of programs and would be able to transfer readily from one to the other as interests or aspirations changed. Moreover, the comprehensive high school seemed to fit our conception of the democratic society. It was hoped that boys and girls with diverse backgrounds and from all social classes would learn to work together and to respect one another within a common educational framework.

The reality has seldom approached the dream. Vocational programs within comprehensive high schools have generally been housed in a separate wing of the school plant. Because of scheduling difficulties, all students have not had ready access to vocational programs; nor have those in vocational programs found it easy to transfer to the academic program (or vice versa) without substantial loss of credit.

The democratic ideal has proved illusory. Vocational educators report that there is a high degree of separatism. Because of "dumping ground" practices, lack of college degrees by vocational teachers, and a poor overall image, both students and teachers in vocational programs are frequently looked down upon by their counterparts in academic programs.

Although the anticipated advantages of the comprehensive high school are seldom realized, society nevertheless pays a substantial price for the effort. Unless a comprehensive high school is very large -- at least 3,000 students -- the vocational program is unlikely to offer the variety of opportunities found in a separate vocational school. The cost of establishing shops, keeping equipment up-to-date, and employing qualified instructors, is likely to place a financial strain on the school budget. Only those programs which are popular with students can be offered. Thus, the student is likely to have only a narrow choice of vocational courses. If a small number of students are interested in a vocational program that is not offered -- say, data processing or horticulture -- the school is not likely to establish a program just for the students.

Advocates of the separate vocational school -- one where students take their trade training as well as related subjects -- argue that such schools enjoy several important advantages over the typical comprehensive high school. They tend to draw students from a wider geographical area and thus have a broader base of financial support. They are generally able to offer a greater diversity of vocational programs, to provide more up-to-date equipment, and to employ more highly qualified instructors. In addition, proponents of separate vocational schools feel that because these are single-purpose institutions, they are able to maintain close contact with industry. This enables them to keep up with technological change and to place students in suitable jobs upon completion of training. It is argued that these advantages more than offset any loss which may occur when a student leaves his neighborhood high school to become a full-time student in a vocational school.

SHARED-TIME FACILITY

In an effort to achieve most of the advantages offered by the separate vocational school, while preserving at least some of the values of the comprehensive high school, many communities have organized shared-time vocational centers. Under this arrangement, students spend part of their time (half days, part of a week, alternate weeks) in their local high schools where they study non-vocational subjects and participate in school activities. They spend the balance of their time at a centrally located vocational school, where they take only vocational courses. The cost of the shared-time facility is divided among the participating schools.

Such an arrangement has several obvious advantages:

-- It can offer a greater variety of occupational programs than any single school can generally provide.
-- It can do so at substantially lower cost than if each local school attempted to establish duplicate facilities.
-- A student retains his identity with his home school.
-- He can participate in extra curricular activities in the home school.
-- He may take academic subjects that would not be available to him in a self-contained vocational school.

The major drawback of the shared-time school is the need for close coordination between several school districts. School calendars and class schedules must mesh. Transportation is frequently a major headache. Moreover, there is a division of responsibility and authority among administrators and teachers. However, these are details and they have been overcome successfully in many areas.

COMPARISON OF TWO TYPES OF SCHOOLS

The question arises which of these arrangements is best? Two recent studies failed to turn up any conclusive evidence to indicate that any single pattern offered a clear-cut advantage over the others.

A study conducted by the American Institute of Research in 1965 (3) asked over 10,000 graduates of vocational programs to rate their former schools on a four-point scale -- from "excellent" to "poor" on ten factors. These included: quality of instruction from shop instructors, quality of instruction from academic teachers, condition of shop facilities and equipment, general physical conditions of the school, vocational counseling, etc. About half of the graduates had attended self-contained vocational schools while the others had received training in comprehensive high schools. No significant differences were found in terms of the overall "attitude toward school" rating and only small differences on specific items. One area where the two groups differed was in the area of "help given in finding jobs." The students from vocational schools gave their institutions a higher rating on this item than did those from comprehensive high schools.

The report also inquired about tools, equipment, and work methods in each type of school as compared with those found by the student on his first job. Nine out of ten students who entered the trade for which they had been trained said that tools and equipment were "virtually identical" or "very similar" to those they had used in school. Eight out of ten students made similar statements about work methods. This suggests that although comprehensive high schools may offer a narrower range of vocational courses, the tools and equipment available to students seem to be on par with those found in vocational schools.

The study found no significant differences in employment security, employment stability, earnings, or degree of job satisfaction between the two groups. The only major difference concerned the "relatedness of the first job to the trade studied." Fifty three percent of the vocational school graduates -- as compared to forty percent of the comprehensive high school graduates -- found their first job in the trade for which they had been trained or in a closely related trade. In commenting on the significance of this finding, the report states: "If the graduates' job is not in the trade studied or in a closely related trade, the chances are high that he will never enter the trade or a highly related trade." The authors attribute the observed difference to the fact that vocational schools seem to give their graduates more help in job-finding than do teachers and counselors in comprehensive high schools.

Kaufman and Schaefer in their recent study of vocational education in nine communities located in the Eastern part of the country (6) report similar findings.

> "There was no evidence that graduates of separate vocational schools were better prepared or more successful in their first job. Neither was there any evidence that comprehensive schools were leading to greater acceptance among students from different curricula. On the contrary, male vocational graduates from comprehensive high schools were much more likely than graduates of separate schools to report that they felt "looked down on" because of the course they took. Other questions on friendship groups and participation in school activities yielded similar patterns of response. The case, therefore, was not made for either school. In a negative sense, though, the evidence was more favorable to the separate school. While it did not appear that graduates of the separate school were better trained, neither did these graduates perceive attitudes of condescension in their school. If a decision as to type of school were to be based on probably attitude of its students, the evidence would favor the separate vocational school."

At the post secondary level, a similar debate is underway regarding the merits of locating occupational programs in community colleges as against specialized institutions, such as area vocational-technical schools or technical institutes. Students and faculty in occupational programs offered in community colleges frequently report that they are looked down on by their counterparts who are in academic programs.

Some states, such as Georgia, have decided to operate their area vocational-technical schools independently of the community college programs. Other states feel that despite some drawbacks, combined programs are preferable since they offer greater opportunity for comprehensive guidance, for modification of program, and for overall articulation.

In one state (South Carolina), vocational-technical education has been separated from the overall system of public education and placed under an autonomous Committee for Technical Education, which is closely linked to the group responsible for economic development. The Committee operates ten Technical

Education Centers which offer a variety of one year trade programs and two year technical education programs. The types of programs that are offered and their contents are determined in consultation with local industry to insure that those trained will meet manpower needs of the area. The Committee also operates special schools to provide skills training needed by new industries locating within the state. The promise of a fully-trained work force -- recruited and trained at no cost to the industry -- has apparently been a decisive factor in bringing new industry to the state. In 1962 when the TEC Program got underway, new plant investment in the state was about $210 million annually. In 1966, it exceeded $600 million and has continued to increase. The Governor, the legislature, and the business community are now, understandably, enthusiastic supporters of technical education. They have also recognized the need for strengthening general education to provide a large pool of manpower that can qualify for and benefit from skills training and technical education.

It should be evident from the illustrations cited, that there is a great diversity in the ways in which vocational education is provided. No single system seems to be ideal; yet if one had to make a prediction about the trend over the next decade, it is likely that training at the post secondary level would show the greatest growth.

CHANGES IN THE OFFING?

The nature of vocational training at the secondary level is likely to change its character in the years ahead. There will probably be greater emphasis on basic education, so that specific job training (when offered) will tend to come in the eleventh or twelfth grade. There will probably be a marked expansion of vocational education opportunities of an exploratory nature. These will serve a dual purpose: 1) to increase the holding power of the school by making education more meaningful and more palatable and 2) to prepare youngsters to make vocational decisions on the basis of a broader experience with the world of work.

The nature of the vocational training offered at the secondary level is likely to focus on clusters of occupations as well as on single occupations, and there will probably be more opportunities to get training in semi-skilled jobs than is presently the case. Students who plan to drop out of school prior to graduation or who plan to go to work after graduation, will receive better preparation in job-getting and job-holding skills.

We are likely to see the emergence of a new type of occupational education facility which will combine many of the best features of the separate vocational school, the shared-time vocational school, and the MDTA Skills Center. It will draw students from a number of comprehensive high schools and may even provide orientation opportunities for elementary school youngsters. Such centers will offer a diversity of training opportunities. The health occupations and the service occupations (including public service) will be represented, along with the more traditional fields. Nor will such centers be conceived narrowly, as a facility intended to serve only students who are occupationally-oriented. College-bound boys and girls will be able to take occupational programs as electives for exploratory and/or enrichment purposes.

Most of the ingredients that will go into the making of such centers already exist. Rochester, New York has begun to implement the concept with an Occupational Annex designed to serve 3,000 students during the day and 1,500 adults at night.

THE CLUSTER CONCEPT

The cluster concept of occupational education is receiving considerable attention. Proponents -- such as Professor Don Maley at the University of Maryland -- disclaim any intention of displacing traditional vocational education with this approach (7). They see job clusters as a supplement -- one that will be especially suitable for students who are now enrolled in General Education Programs and who do not have well-defined vocational goals. Professor Maley feels that ". . . this group frequently leaves school with a reasonable good basic education, but . . . without any form of occupation preparation. The proposed cluster programs in vocational education with its two periods a day could easily be part of the General Curriculum student's program." It could then provide an opportunity, says Dr. Maley, for job exploration and at the same time offer an opportunity to acquire sufficient skill, and understanding for job entry. Since the student is not channeled into a specific occupation, he has a chance to appraise his interests, and potentialities in several fields prior to making a decision regarding the one in which he would like to work or seek further training.

Dr. Maley and his associates at the University of Maryland have identified the following clusters:

> Construction Cluster (Occupations dealing with the building of homes). This includes carpenter, electrician, mason, painter, plumber, etc.
> Electro-Mechanical Installation and Repair (primarily of equipment found in homes or business establishments). This cluster includes air conditioning and refrigeration servicemen, business machine servicemen, home appliance servicemen, radio and TV servicemen.
> Metal Forming and Fabrication (deals with machinery, bending, and joining metals). It includes assembler, machining in many forms, sheet metal worker, and welder.
> Human Services Cluster (deals with nutrition, food services, food handling, home management, institutional management, beauty culture, horticulture, health services and recreation.) This cluster has been proposed for those sectors where there are employment opportunities in nursing homes, resorts, and country clubs, and other types of recreational facilities).

The cluster concept is currently being explored by the American Institutes for Research and Public Schools, Quincy, Massachusetts (1). The project is attempting to determine the effectiveness of instruction derived explicitly from analysis of behavior on the job. Eleven job families have been analyzed to find out what people do, and what knowledges and skills they need in order to do their jobs. The areas being studied are: Electro-electronics, Metals and Machines, Power Mechanics, General Woodworking, General Piping, Foods Preparation, Computer Data Processing, Health Occupation, Graphic and Commercial Arts, Home Economics and Business Education.

It is still too early to generalize about the significance of the job cluster approach or its probably impact on the vocational education curriculum. Commenting on Professor Maley's research (as reported in the October 1967 issue of American Vocational Journal) Dr. Thomas Olivo, Director of Industrial Education in New York State makes the following editorial comment:

> "Experienced state and national leaders who have contributed significantly to major curriculum philosophy and developments in vocational-industrial-technical education seem to be missing (i.e., from Professor Maley's Project) certainly those who serve as approved vocational industrial teacher trainers, vocational curriculum development personnel, outstanding vocational-industrial-technical education teachers, qualified area directors of vocational education and others need to carry on independent evaluations of the (Maley) study.
>
> To be forthright, editorially, these experienced, knowledgeable persons and groups need to resolve a philosophical issue; is the broad generalized occupational cluster program approach really sound vocational

> education? In this instance, would it constitute a bonafide quality vocational industrial education program?"

It would seem despite Professor Maley's specific disclaimer -- that the cluster concept is not intended as a substitute for other types of vocational education programs, but only as a supplement -- the idea is likely to come under fire from the more traditional vocational educators.

QUALIFICATIONS OF TEACHERS

One possible bone of contention may be the qualifications of those who will teach in programs employing the job cluster approach. If it appears that schools anticipate using industrial arts teachers and other personnel who do not meet the "experience requirement" of current state licensing regulations for vocational teachers, there is likely to be opposition from the leadership of traditional vocational education.

In New Jersey there has been a rapid expansion of vocational education through the installation of so-called "pilot programs", which, in many instances, have employed instructional personnel who did not meet state certification requirements. "Old-line vocational educators have been sharply critical of this approach, maintaining that it does not represent "quality" education. However, by resorting to what may be a less-than-ideal solution, the Division of Vocational Technical Education in New Jersey has been able to increase the number of students involved in vocational programs. Prior to 1964 the proportion of students in the 15 to 19 year old age group enrolled in vocational programs ranged between 3% and 7%. This has now been increased to approximately 29%.

Experimental projects of this type should be subjected to a thorough evaluation. Follow-up studies are needed to determine what happens to the youngsters after they leave high school. Do they get jobs in the field in which they were trained or in a closely related field? Are they able to progress on the job after employment? What do their supervisors think about their occupational preparation and their work attitudes? If no significant differences are discernible between students trained in traditional programs and those trained in the so-called "pilot programs," it might suggest the need for re-examining the assumptions underlying the "experience" requirement, which has been a basic tenet of vocational education for many years.

Probably the best thing that could happen to vocational -- or any other form of education -- would be the questioning of this and other long-standing assumptions. We have already seen a number of significant breakthroughs -- such as the redefinition of what constitutes vocational education and the elimination of the requirement that students spend half of each school day in a shop or on a farm. Innovative ideas deserve to be given a fair trial. However, careful evaluation should be a prerequisite of such endeavors before they are recommended for widespread adoption elsewhere.

SHOULD COOPERATIVE PROGRAMS BE EXPANDED?

It seems to this writer that one of the ways to broaden vocational education and to facilitate career development would be through the expansion of cooperative programs. Such programs have been highly successful in the field of Distributive Education. Large numbers of students have found it possible to work part of each day in a business establishment, while spending the remainder of the day in school studying vocational subjects and strengthening their basic educational skills. The cooperative approach has also been used in Trade and Industrial Education, but not nearly to the same extent as in Distributive Education.

It would seem worthwhile to examine carefully such programs as have been carried out to determine how well they have worked. What factors seem to be related to success and failure? Do such programs work best when preparatory work in the school setting precedes on-the-job training? How much supervision by school personnel seems necessary for such programs to work successfully?

The experience of Neighborhood Youth Corps is also worth examining. Young people from deprived backgrounds have been given opportunities to work in a wide variety of occupational settings: non-profit agencies related to government, health, recreation, etc. The goal of the program has been to develop good work habits and job attitudes, rather than to develop occupational skills. It would seem that these agencies offer a fertile field for various levels of occupational education -- for job exploration and for applying the knowledge and skill taught in the classroom. In all likelihood the traditional vocational educator would dismiss such programs as having no place in a quality program of vocational education, but to the educator concerned with the vocational development of young people, they would seem to offer an opportunity of unparalleled magnitude.

WHAT ROLE FOR ON-THE-JOB TRAINING?

One might also want to look at some of the practices of the Manpower Training and Development Program -- not only at the orientation and curriculum content of Skills Centers -- but also at on-the-job training programs sponsored by industrial groups. One such program, being carried out in conjunction with the machine tool industry, pays owners of machine tool companies for providing training opportunities for machinist apprentices. MDTA funds are also being used to reimburse automotive apprentices.

If the concept of reimbursing industry for accepting training responsibilities has any merit, how far can it be extended? One advantage of the approach, if it is workable, would be a tremendous expansion of the fields in which training could be offered. Vocational programs would no longer have to be limited to a relatively small number of occupations. The training provided would be on up-to-date equipment, frequently beyond the reach of the average school. Moreover, the trainees would be backed by the training resources of industry. In many cases these far surpass those available in a vocational school.

At the Philadelphia conference alluded to earlier (13), Mrs. Rosyln Kane, a Manpower Development Specialist with the Office of Economic Opportunity, observed that "(when) you go into the training program in industry, you find they are exciting. They use all kinds of audio-visual aids and training techniques that are simply not being utilized in the schools. There is so little interchange between those who are training in industry and those who are training in the schools. It's as though they were two totally different systems." As a matter of fact they are different systems. It's unlikely that any school system has the financial ability to duplicate the training resources of a General Motors, Ford-Philco, IBM, or Xerox; nor should they have to do so. It would seem worthwhile to explore with industry the possibility of contracting to use training facilities and training personnel during such times as these are not required for company training programs. (Tax benefits might even be offered as an inducement.)

WHAT ROLE FOR PRIVATE SCHOOLS?

We might also ask why public schools do not make greater use of training opportunities that already exist in the private sector? Suppose a high school has only two or three youngsters who are interested in such fields as cosmetology, data processing, or electronics. It is obviously uneconomical to establish programs for only a few students. Do we channel them into existing programs or deny them training altogether? Might it not be possible for a school to arrange for such students to receive their training in private vocational schools that already exist in the community? Tuition would be far less costly than hiring teachers, providing equipment, and finding space within the school setting.

This idea is not as revolutionary as it sounds. Many smaller schools now enroll students in correspondence courses in subjects (such as calculus) where there are too few students to justify offering it in the regular curriculum. Might not the same reasoning apply in the case of vocational training? In fields where there are a great many students interested, such as auto mechanics or business education, it may be more economical for the school to establish its own program. However, the number of such programs -- judging from past experience -- is quite limited. It would seem that the shared-time facility or skills center is one approach, but in many localities enrolling students in a private vocational program on a part-time basis may be an equally good solution. At least it's worth thinking about.

The ideas that have been advanced in the latter part of this paper are intended to stimulate discussion of alternatives and supplements to the present procedures for accomplishing the mission of vocational education. There may be good reason why many -- perhaps most -- of the suggestions that have been mentioned should be discarded. But the quest for new approaches must go on. Now more than ever there is a need for an active interchange of ideas between vocational education and other disciplines. The times are changing -- as is the mission of vocational education. Already we can sense that vocational education is in the process of becoming much more than the preparation of youth for work. Vocational concepts are permeating the curriculum, the instructional process, guidance, and the preparation for leisure. In the years ahead, it is likely that the concept of vocational education will be broadened even further -- so that the totality will indeed be greater than the sum of its parts. It is indeed the "best of times" and, possibly, for some who may feel threatened "the worst of times." Yet, even the latter must recognize that the vocational education curriculum cannot stand still.

FOOTNOTES

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Nathaniel H. Frank*

REACTION

Dr. Shimberg, in his paper on "Vocational Education: Is It More Than Education for a Vocation?" poses three basic questions to which answers must be sought if one is to design properly a sound program of vocation education. They are:

1. How can we make sure that every student receives the basic education necessary for occupational education?
2. How can we provide each youngster with the information and experiences that he needs in order to make intelligent decisions about his life's work?
3. How can we provide occupational education that is appropriate to the needs, interests, and abilities of young people so that they can enter gainful employment, progress on the job, and cope with changing technology effectively?

My discussion of these questions is an attempt to supplement the excellent discussions presented in the paper. With regard to question 1, I submit that part of everyone's education should be concerned with preparing him to function effectively as a contributing member of society. Of course it must be understood that formal education can at best supply only part of what is required for occupational or career proficiency. If this proposition is accepted, then occupationally oriented education must be recognized (in fact as well as in pronouncements) as an integral part of all education. It is particularly urgent to supply students with new routes and introductions (alternatives to the traditional subject-structured curriculum) to higher learning. These should capitalize on non-verbal capabilities and talents as a base for the acquisition of skills, of understanding and of competence in the academic disciplines. Vocational education provides a way of learning -- and is properly not describable as a curriculum -- that is inherently concerned with non-verbal modes of learning. What is sorely needed is the availability of project-type, goal-oriented processes, requiring personal investigative involvement of students.

Investigative patterns of learning can be fashioned for a wide range of objectives, from the carefully controlled investigation designed to lead to understanding within a discipline to the essentially non-disciplinary working with real processes, materials and systems. The latter are characterized by their extraordinary complexity. The closer the investigation lies to real-life problems, the greater the need for an infusion of empiricism, intuition, judgment, etc. along with application of fundamental principles. To borrow a term from medicine, what is called for is the preparation and introduction of "clinical" education. In providing new investigative learning opportunities, provision must be made for optimizing a mix with academic learning to match individual student needs and differences.

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There is much to recommend an initial and strong emphasis on technological investigative learning. In fact, insight into and understanding of technology should become a significant component of general education. Not only is the use of technological devices and operations spreading rapidly to almost every kind of society's activities but, even more importantly, technology has already become a major driving force for social change.

Turning now to the second question which calls for intelligent decision-making as to career choice on the part of the students, I would emphasize that the need for decision making capabilities in general is essential. In contrast to the prevalent absence of the possibility of student decision making in most traditional educational patterns, an investigative educational framework would have built into its operation both the opportunity and need for student decision making at any and all educational levels.

The third question poses complex requirements for which adequate answers seem to me attainable only if we are willing to consider far-reaching changes in the rationale of occupationally oriented education. Traditionally, occupational education has evolved in learning patterns based on the acquisition of skills required to function in a single occupation or in a related cluster of occupations. Because of the rapidly growing rate of change of skill requirements, a major change is called for in the rationale underlying the design of educational offerings such that they are centered on meaningful themes and needs that have the promise of relative longevity and importance to society. Such themes can be found in the major activities of people and, for example, in the technological domain are exemplified by such missions as energy conversion and use; the use and manipulation of materials; communications; transportation of goods, services and people; etc. Such central guidelines for the generation of experience-based learning provide fundamental cognitive themes and cohesiveness and also couple naturally and strongly to the academic body of fundamental knowledge. Of course, the acquisition of requisite skills for the discharge of such missions will be part of the experience, but changing skill requirements will leave relatively unchanged the main purposes to be attained by them. It is evident that this kind of shift of emphasis in the design of learning experience is readily generalizable to areas other than the technological. Furthermore, it might be well to examine the possibility of reversing the temporal sequence of subject presentations, especially in the areas of the social studies and the humanities, starting with current situations and problems and working backwards to attain understanding of how they came into being. The relevance of such a scheme to today's concerns is clear, as is the relation of the more immediate past to changes in employment and career opportunities. Out of this structure can emerge insight into rates of societal change and with this a reasonable base for extrapolation for prediction of things to come.

I turn now to brief comments about some of the items discussed in Dr. Shimberg's paper. First, with respect to computer-assisted instruction, it seems to me that it is important to explore how computers can be used to do more than improve learning opportunities within traditional educational offerings. In particular, there is need for exploitation of computer simulation to extend laboratory experience and provide for individualized learning in this area. Next, with regard to the role of counselors in helping students make wise decisions as to their career choices, I would raise two questions: How can counselors acquire a base adequate for this kind of counseling? Is practically total dependence on verbal transfer of information sufficient for this function?

The discussion of separate vocational facilities versus comprehensive high schools calls for a closer look at the problem. The need for comprehensive education is not generally available in most so-called comprehensive high schools. Since separation is built into the program offerings, it is not surprising that physical separation is not a sensitive variable. Operations based on time-sharing of facilities by students mitigate against truly comprehensive learning. The cluster concept does provide a step forward from the separate skill training programs, but can at best produce a relatively small continuous change in the overall strategy. When a discontinuous quantum jump is called for, as in a transition from a skill-based to a function-based educational framework, such processes will not do the job.

Teacher qualifications are of course central if any constructive change is to really work in practice. Cooperative group teaching in which each member of a group must acquire literacy in the fields of competence of the others in the group is required to obtain the synergistic effects so vital to comprehensive learning. Cooperative work-study programs invariably are confronted by the danger that the work and school experiences of a student may actually turn out to be two valuable but relatively independent experiences. What is called for is a cross flow of educators and work supervisors between work and education. This is in many ways more critical than student cross flow. Only by personal involvement of both educators and work supervisors in each other's activities can an effective fusion and mutual reinforcement of the two student experiences be attained.

Finally, I should comment very briefly on a fundamental issue. Vocational education at the secondary school level is called on to serve two important functions: to provide an adequate occupational educational base for its students and also to provide necessary and realistic job entry skills. Clearly this is too much to be accomplished with any degree of excellence within the framework of secondary school operations. Vocational education has in general focused strongly on the second function and done the best it could relative to the first. I would like to call to your attention the extraordinarily complex and awesome task of ensuring that students can effectively make the transition from formal schooling to work or career proficiency. The difficulties and efforts required are seriously underestimated. This whole problem needs serious study and raises questions as to the advisability of eliminating the relative sharp interface between school and work by the creation of new institutional settings in which the necessary collaboration between employers and educators can take place naturally and efficiently to provide the requisite training-learning programs. I have had occasion to outline a plan for this mixed operation, but the limitations of time preclude a presentation at this conference.

ADMINISTRATION

Richard A. Gibboney*

THE SOCIAL CONTEXT, POVERTY, AND VOCATIONAL EDUCATION

It is a truism that a society leaves its cultural stamp on the formal educational system which it supports. But how many educators and lay policy makers understand this fundamental idea? There is evidence in much of the current literature on new programs for vocational-technical education, for example, that the social fact of poverty is ignored or only dimly perceived by educational planners.

The critical conclusion is this: Until America decides to come to grips with the social crisis posed by poverty and unemployment, vocational programs will always be inadequate to meet the social and educational needs posed by these social problems. Vocational educators, and those laymen responsible for policy in vocational education, will reap the whirlwind when the public suddenly "discovered" science in 1957 when Sputnik shot into the heavens. We are, in effect, making well-intentioned promises which we cannot fulfill because we are ignoring the powerful influences of the larger culture and exaggerating the corrective influences of the school.

Can we ignore the social reality which Michael Harrington so effectively documents in both statistical and human terms? Some of Harrington's data are as follows:

Some 20-25% of our people are poor (40 to 50,000,000) using an income of $3000-$3500 for an urban family of four as the cutoff. About 30% of American families live in sub-standard housing.

In 1958, the lowest one-fifth of our families (the poor) earned $1460, or 4.7% of total family income; while the highest one-fifth earned about $14,200 or 45.5% of total family income. In 1958, the poor had less of a share of personal income than they had in 1944.

Robert Lampman's study estimated our poverty population (people!) at 32,000,000 of whom 6,400,000 were non-white; 21,000,000 were in family units headed by a person with an eighth grade education or less; 8,000,000 were over 65 years of age; and 11,000,000 were under 18 years of age.[1]

Estimates indicate there will be 2,000,000 young people, most of whom are yet to appear, without a grade school diploma.

Job Corps, work-training programs are good, but full employment is a necessity. A big public investment will be required for full employment.

Between May 1962 and May 1963 the labor force grew by 1,200,000; jobs increased by 900,000. Almost the total rise in joblessness was felt by the 16 to 19 year olds. Their unemployment rate was over 20%, approximately four times the rate of the adult force.[2]

With the children of the poor, a grim process is at work: it is likely they will become the parents of the next generation in a culture of poverty. Poverty is deadly for the young. It is more and more difficult "to break out." These children go to the inferior schools, and come from families who have a low opinion of education. Thus our first generation of hereditary poverty may be with us.

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The young are about one-third of the poverty group. There is presently no real way out for most of them.[3]

As Harrington makes clear, we are talking about people not numbers alone. He feels and communicates the desperation hidden in the Labor Department's statistics. We have heeded neither the desperation nor the statistics in any way commensurate with the human dimension of the problem.

Poverty hits more than the pocketbook. It twists the spirit. Mental health studies show the poor have a 40% greater risk of mental illness; the poor have a treated rate of psychiatry illness almost three times as great as any one of the other four social classes studied. This mental sickness is a means of relating to a diseased social environment. They take what the tide brings in, which is not much.[4]

So our poor, and they are legion, are undereducated; untrained for jobs which do not usually exist for them; many come from homes broken by divorce, separation, or desertion. They are, not without reason, hostile to the larger society and suspicious of it. If a program for training does become available, many times they cannot qualify.

Our poor are atypical - they conform to their own society. They are "odd man" and they are "out."

Vocational education itself cannot create jobs. If it graduates from the ghetto or the suburb are trained but there are no jobs waiting, social pressure continues to build. Vocational training has merely deflected the pressure -- albeit to a higher level.

What can a vocational guidance counselor do with a youth who is not there? With one who has dropped out of the society of the school and into another because of more fundamental social reasons?

How educable are many of these youth, suffering from feelings of alienation, hostile to the dominant groups that the school represents, and handicapped by inadequate medical care? Almost insurmountable educational problems thus are created by more basic social problems.

Is an electronics course the answer to these disabilities? Does not society have some preliminary work to do before the school can reasonably be expected to educate?

Does not vocational education need a climate of full employment? Does it not require an entry job to train for?

Can we ignore the one-third of our citizens who are not "there" -- in school, at work, sharing in the rewards of the "affluent society?"

Vocational educators alone cannot solve social problems, but they are in a unique position to point out to citizens and legislators that the necessary investment in education is closely linked to investment in programs directed at the root causes of poverty and unemployment. Otherwise the implied promises of vocational education cannot be met and a strong negative reaction against vocational education may occur when the relationship between poverty and vocational education becomes more clear to the public.

If society neglects its primary responsibility, education can do little more than bail out the social boat. If, while furiously bailing, educators give the illusion of progress, fundamental solutions to social problems may be seriously delayed and education itself may be hurt.

Is vocational education adequately meeting evident social and human needs? Is it properly "linked in" with our social and educational systems? The answers must be a qualified "no." A portion of the responsibility for this condition rests with educators and board members who exert the primary influence on educational policies through action or inaction in response to problems which may be recognized or ignored.

What are some of the basic factors which may account for the orphan status of vocational education in our society and in our schools?

The five factors cited below contribute to this condition.

Our Greek heritage which undervalues the work of the craftsman. A rigid attitude which led us to accept specious dualisms has also plagued us; e.g., process and purpose, mind and body, being and becoming, theory and practice, and content and method. If we too hastily over-value the abstract to the concrete, for example, we pose difficulties for such legitimate human endeavors as the dance, painting, music and, in another area, for industrial arts, vocational education, the use of concrete materials in learning, and the planned study of the living community. It is probably no accident that such activities and subjects are today absent from the education of a majority of our students.

The prevailing influence of the upper social classes on educational policy contributed to the isolation of vocational education. This influence rather consistently throughout our history emphasized academic subjects, college entrance requirements, and which only slowly opened the school door to increasing numbers of our youth. (The door was almost fully open in the 1920's).

The relative isolation of vocational educators from other specialists in our schools and universities permitted the vocational specialist and non-specialist alike to indulge in self-fulfilling fantasies about the other. (Until recently both groups were relatively pleased with their respective fantasies before the education acts of Congress pushed them closer together.)

A narrowly practical view of vocational education, enhanced by the vocational educators' isolation from both his educational and industrial colleagues also kept vocational education out of the educational mainstream. This development has left us with more narrow-skill specialities than many educators believe to be desirable. Such narrow training is out of step with changing industrial requirements and the broader intellectual attainments required for technical work and successive job retraining throughout one's working life.

The too frequent indifference of the educational generalist and lay policy-maker to the ideas and concerns of the intellectual community and to the developing social problems in the United States left the schools without an articulated value system to which there was deep commitment and which would have exerted the determining influence on countless "practical questions" which demanded a response. The lack of basic programs until recently for either the disadvantaged or gifted student in many of our schools are two of many possible examples which illustrate this point.

In sum, what the practical man thought was practical, aloofness from educational theory and growing social concerns, may not have been so practical after all. Few institutions can sustain themselves with only narcissistic glances at their mirror image.

A quantitative profile of vocational education today may be helpful in assessing our vocational effort on the basis of social and human needs.

By 1975, 4,000,000 workers with new skills will be needed. Only 255,000 are now being trained.[5] If the need by 1975 proves to be half of that predicted, the gap between need and effort is overwhelming.

Before the Vocational Education Act of 1963, there were 405 area vocational schools in operation; today there are 756. By 1975, 1900 area schools will be available at the present rate of construction.[6] This increase of approximately 85% in area vocational schools in four years is commendable in a too-long neglected sector of education. The real need for 1900 such schools by 1975 can only be seen on the faces of thousands of troubled students who need these facilities now (and countless thousands of others who have long since "graduated" and who are, presumably, making the best of it.)

There are approximately 22,000 secondary schools in the United States. About 2,000 of these schools are offering modern agricultural courses in ornamental horticulture, forestry, and agricultural mechanics.[7] Approximately 1,500 schools are providing work-study programs.[8] A review of programs in such areas as electronics, cosmetology, building trades, and auto mechanics would no doubt reveal that far less than a majority of our schools are offering relevant vocational courses. Given the relatively slow spread of vocational education up to 1963, such an assumption would appear to be valid.

Dollars needed and dollars actually spent on a program are a good general index of social need and the response to meet it. The several states (three states not reporting) estimated that they required approximately $1,140,000,000 in local, state, and federal funds adequately to meet their vocational-technical-educational needs for the fiscal year 1967 (exclusive of MDT needs). The total expenditure for such programs in fiscal year 1966 was close to $755,000,000.[9] We again see the obvious gap, but it does not appear to be so serious as the symbolic program gap between the total number of secondary schools and the small number offering modern courses in that oldest of vocational subjects, agriculture. It is true, of course, that it is easier to appropriate and spend money than it is to get relevant programs, properly taught, to live students. Two points are pertinent if we are to reach live students with relevant programs.

On both the basis of common sense observation and empirical evidence, it is clear that many of the vocational programs we have had over the years have made a positive psychological difference to thousands of youth. The idea of the curriculum as therapy is appropriate. This idea holds that a curriculum, with its inherent materials and instructional methods, may consciously be used to develop attitudes of personal worth linked to honest success experiences for students regardless of their presumed capacities or incapacities. The primary emphasis is on the development of attitudes and feelings (affective qualities) rather than primarily on knowledge and skills (cognitive qualities) although both kinds of learning are obviously given.

The experiment in Perrysburg, Ohio, in the Penta-County Vocational School, is an example of the curriculum as therapy. One hundred-twenty students who were serious truancy cases were selected by the administration as likely dropouts. In the first year of operation with a new curriculum, the attendance rate averaged 95 percent; many students traveled much greater distances to get to the vocational school than to their previously attended local high schools.[10]

Although these and other data are preliminary, it is reasonable to assume that the young people involved are developing new feelings of their own worth and better attitudes toward school and society. Factors such as these should be systematically researched in the Perrysburg effort.

Our schools are word bound. Words are, in most schools, not only symbols for reality but The Reality. Partial evidence for this statement is found in our near-total dependence on a textbook and talks-by-teachers. This is not an anti-intellectual position, but a plea for a more balanced educational effort to reach effectively more students. The road to the senses is not so narrow that it can only be traversed by words. Certainly general purpose shops or laboratories which offer creative opportunities to solve problems in three-dimensions and to explore the characterists of many physical materials and tools; experiences in painting, sculpture, and dance; or the construction of objects from wire, metal, or wood provide many students with a welcome relief from the incessent words and lead to the discovery of new interests and skills which would otherwise be missed. These activities should lead, in short, to learning and would be a subtle reminder that hand-mind work is also important to one's growth.

It is clear that the social success of vocational-technical education is clearly tied to the larger social problems of poverty and unemployment. False expectancies should not be created in the public mind. State and national organizations of vocational educators (and other educational organizations also) should re-emphasize this relationship to state and Federal legislators.

The intellectual isolation of vocational and general educators from each other, coupled with the historical indifference of lay policy boards to the needs of lower class and less verbal students, has contributed to the excessive narrowness of most contemporary vocational programs and to the lack of any comprehensive vocational program in the majority of our 22,000 secondary schools.

FOOTNOTES

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[10] Venn, op. cit., p. 38.

John E. Deady*

REACTION

In a direct and lucid presentation, Dr. Gibboney has emphasized the serious gap which exists between educational theory and practice and its resulting effect on society. Closing this gap is the challenge which all of us must face. I think we are a bit like the scientists who understood how to split the atom but needed time, money, and personnel to do the job.

Dr. Gibboney speaks of the need for a great quantity of Vocational Education but equally important, he stresses the need for quality programs. He states that until we as a people come to grips with the problems of poverty and unemployment, we shall never develop adequate Vocational Educational Programs. I would insert here that Vocational Education will be inadequate unless we consider the needs of millions of people who live in this cybernetic society who will change their jobs five or six times in their working lives and will have to receive special training for each change.

I believe one thing is certain: Education has not met the challenge yet and as I view the myriad, complex problems facing education today, I seriously question that we can find solutions to them within the traditional framework of local control and support -- but this is an area for study in itself.

Dr. Gibboney suggests that until recently educators wouldn't go beyond their own backyards and I believe he is correct in saying this. The educational "establishment," and by that I mean our public schools, is primarily concerned with doing rather than thinking. A teacher who is before a class five periods a day, plans lessons, corrects papers and handles his "busy work" has little time for imaginative activities. Basically, creativity is not rewarded in our schools and there has been little academic freedom in the true sense of the word.

On the other hand, teachers do not feel free in an individualistic melieu. This condition is the result of a commonly held belief that education's role is to reflect the values of society rather than to shape them. We hear the cries of anguish from teachers. They are well aware that existing educational patterns will not do the job which must be done but they do not have the training, knowledge, experience or time to formulate answers to obvious problems which they face daily.

In a typical community, the school committee tends to spend more time on administrative matters than discussing major issues facing education and finding viable solutions to the problems which are identified. Frequently committees and superintendents engage in a game which might be called "survival," but enough on that subject.

Frequently, new ideas which are introduced and which collide with tradition are frowned upon. There is little money available for experimentation. (As a matter of fact I doubt that adequate sums of money ever can be made available unless we overhaul our antiquated tax structure which has its roots in an agrarian society which has long since disappeared.) Dr. Gibboney states quite correctly that what is passed off as research or experimentation is "only as deep as the paper it is written on." We, as educators, like charlatans, provide nostrums which seldom alleviate and never cure the problems facing education today. Lest this be considered a scathing indictment against administrative leadership, I think it is only fair to point out that we share the blame for our shortcomings with the society which created us.

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If I have spoken so far in a negative tone, let me say that all is not hopeless. There are ways to improve our educational system. Someone once said that we should know the past lest we be condemned to repeat it. With this I agree; but for solutions we must look beyond the horizons we have explored to date.

First I believe we must better identify the needs of children. Then we must help them to understand themselves, the society in which they live and the contributions which they must make to it. We must create a basic education program which will provide each child with the skills which will permit him to explore any field.

Focusing in on Vocational Education, we must determine its dimensions in our society. We must bring about a better understanding of Vocational Education in the ghettos and we must open up job markets for these people after they have been trained. We must gain the support of labor unions which have a great influence on the numbers of people who enter any given trade.

Somehow we must get large amounts of money from the state legislature for study, for experimentation and for implementing on a broad scale ideas of proven worth. Up to the present I do not feel we have properly conveyed to members of the legislature the urgency of our problems.

Within our schools we must eliminate rigid schedules and increase the amount of self-directed activity of students. We must create new programs to meet their needs. It is a fact that a large number of them are not really learning within the existing framework. We must recognize that students do learn at different rates of speed; that they do have varying talents and that frequently they see little relationship between what happens in school and the world in which they live.

I believe that at least a brief word should be said about the potential for meaningful educational programs outside the framework of the "establishment" to which I have referred earlier. Business establishments and industrial laboratories represent excellent locations for purposeful learning activities. I believe also that we should find ways to tap the tremendous reservoirs of "idea capital" which currently can be found in the worlds of commerce and industry. Outstanding men with special talents should be brought into the schools to teach students or share their knowledge with teachers.

I believe we must take a serious look at the training of teachers. In addition to learning the subtleties of their subject matter, they must develop a scholarly understanding of the changing world in which they live. For those teachers presently in the classroom we must release them from their intellectual and functional straight-jackets. We must assist them to develop a rational understanding of societal problems and to transcend the mundane trivia which is so much a part of public education.

Referring back to Vocational Education, I believe it will be an increasingly significant segment of our expanding educational structure. It will be necessary to close the gap which has existed between the academic community and those who have worked in the schools. It is absolutely essential to concern the scholars with the whole subject of Vocational Education and bring them into close contact with those who make policy and those who must put that policy into effect.

The problems relating to improving Vocational Educational programs are critical but we must move forward. The German Philosopher, Lichtenburg, once said, "I don't know if changes will make things better, but things won't get better without change."

I am reminded of the physics professor who was explaining the quantum theory to his students. The first two times they failed to understand it. After the third explanation, the professor understood it.

Perhaps if we continue our conversations about educational problems, gradually we shall grow in our understanding of the problems which we face and possible ways to solve them.

TEACHER EDUCATION

Ernest L. Minelli and Thomas M. Benton*

BUT READJUST WE MUST -- TEACHER EDUCATION

Some time ago a prominent scholar wrote:

> The faculty of imagination is the great spring of human activity, and the principal source of improvement . . . . Destroy this faculty, and the condition of man will become as stationary as that of the brutes. - - - Dugala Stewart.

Most of us are familiar with the tremendous rate of technological change which has occurred over the past decade. From the imaginative dreamers of yesterday have come the machines, gadgets, and ideas that we depend so heavily upon today. For while the world of reality may be limited, the world of imagination is boundless.

Many new ideas are stillborn, and countless others are ephemeral and perish without a trace. Some are only casual thoughts; others become cornerstones of faith. Some are bitterly resisted; others are welcomed. For some the welcome comes early; for others it is tendered late.

Nevertheless, it is imperative for educators to know what changes lie just over our professional horizons and to be able to anticipate how they will affect our lives and our teaching. Obviously and most appropriately we must ask: Does change in education have a direction? If so, what is it, and is it likely to continue in the future? Can we plan for it? Can we prepare ourselves for the adjustments that will come and must come, or do we constantly court the professional disaster of losing all that each of us has worked for? We can arrive at such knowledge only if we can forsee a predictable and comprehensive process of change.

The biologist, physiologists, and psychologists have by no means solved all the problems of individual maturation. But they have led us to understand many of the mechanisms of growth, and we can say with certainty that the growth of an individual is an inevitable biological and psychological function. We are not nearly so certain, however, about environmental change or the reasons it must come about.

True, in the United States we seem to be committeed to a belief in inevitable progress. Our history supports this belief, for we have unendingly produced more and often better gadgets. But while many have hailed the first half of the 20th century as the dawn of a bright new era, for others the death of old forms of life has brought disaster and the rapid changes have left them bewildered and hurt. Even though we in this country are imbued with a belief in continual progress and convinced that change will make ours a better world, some of us have extreme doubts as to the wisdom of many of the changes that have taken place. Many feel that the changes are far from progressive, but are instead rather chaotic in nature, make no sense, and actually have no direction. Many correctly bemoan change for the sake of change; others are simply unprepared to pay the price that progress extracts. Everyone has had to react to changes in some way, but each of us has had constantly to readjust his way of life and very often even the basic values by which he lives. Sometimes these readjustments are pleasant; sometimes they are unpleasant. But readjust we must ----.

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To meet this charge, there must be a constant quest for imaginative thought, research, and developments aimed at improving ourselves and what is being taught in our schools.

A democracy demands of its education both quantity and quality. With the challenge of quantity having largely been met, our attention must turn to improving quality, now more difficult than ever.

A superior educational program today may be an inferior program a decade from now -- unless bold, imaginative steps to improve upon that program are continuously taken. Today's failure to meet this challenge may very well perpetuate the status quo rather than lead to improvements or to the fulfillment of the purpose of our secondary schools in this 20th century. The breath-taking developments of our technological revolution and exploration of space can no longer be taken for granted. Needless to say, knowledge has expanded tremendously and is continuing to grow at a prodigious rate. Obviously then, curriculum development, content, organization, educational practices, and teacher education cannot be based on static or retired concepts. There must be a constant quest for imaginative research and developments aimed at improving our programs and closing the gap between life and what is being taught in our schools. The late Frank Lloyd Wright, when asked by a reporter which of his many works he would select as his greatest, replied, "My next one."

James E. Russell, as secretary of the Educational Policies Commission, addressing the opening general session of the American Industrial Arts Association meeting in St. Louis some years ago said, "Educators must be aware that the rise of national knowledge plays a greater role now than at any time in the past." He emphasized the importance of teaching children to think. He went on to say, "The force which is remaking the world is the rational intellect of men and the man who can earn his own dignity in the future will be the man who can use that force."

Imagine within the next two decades, it is likely that we may be mining the asteroids, traveling to and from Mars, and, through bioelectronics, giving new life to crippled or diseased organs of the body. We may even change the character of a planet, and put education on a home-study basis.

Civilization is now at a period in history which may be designated as the age of automation or that period introducing a new technology (incidentally its roots can be traced far back in our industrial history) heralded by some scientists as the second industrial revolution. While the first industrial revolution replaced animal and human muscle power with steam or electric-powered machines, automation used electronic devices to replace human regulation and control of machines. It has changed the machine tender into a supervisor of an automatically controlled operating system. We have not, however, replaced human creativeness, imagination, nor purposefulness. This new technological system is still subject to the instruction and criteria man provides.

Turning now to the exploration of space, we find a second force with potential equal to or even greater than that of automation introducing new discoveries and technological advancements increasing at exponential rates.

Until recently, man was hopelessly trapped on his revolving planet. Today, he has taken giant steps toward space travel, in fact has even walked in space. Less than ten years ago there was Sputnik I, followed within a month by Sputnik II and then, three months later, by our own Explorer I. During this decade we shall probably land a man on the moon.

In achieving this much and in pushing on toward the ultimate conquest of outer space, billions of manpower hours are spent annually. In the excitement of space travel we have also lost sight of the many discoveries and down-to-earth applications of new materials, devices, and scientific principles uncovered in the frantic research now going on in rocketry. Moreover, we have ignored their implications for vocational-technical education.

For roughly half of man's existence on this planet, he has lived much like other animals and his existence was precarious. Man eventually achieved a dominant position over all animals largely because he learned to use and produce tools. Homo sapiens became in time homo faber, the maker of tools.

Next, the power-driven machine was undoubtedly man's greatest achievement. Recognizing himself a puny source of motive power, man created the machine. This he created in his imagination.

As the user of energy, man supplied the driving power for tools, mechanisms, and devices which make up industrialization and promote economic growth.

Finally, through the science of chemistry, man has transformed matter to create an artificial world.[1]

The changes which have accompanied the evaluation of machines and technology have influenced the lives of all individuals and the functions which enterprise and social institutions must discharge.

At this point, then, the question might be asked: What has this to do with education, or more specifically, vocational-technical education? We believe, in view of what has been said, that definite educational implications have been defined and that, from this, we can make certain assumptions regarding the demands that will be made upon the vocational-technical employee of tomorrow. First, he will be called upon to perform tasks which are not feasible now and were unheard of yesterday; second, he will be asked to supply himself with greater efficiency and dependability than ever before; and third, he will be asked to adapt quickly and efficiently to completely new tasks and positions of greater responsibility.

If this is true and if the schools have a responsibility for the educational preparation of individuals who will enter vocational-technical occupations, what should be the nature of the educational program? What should be the primary objectives of the schools in working with such youth? Through what means is the individual prepared for a job which may not yet exist? How is the individual given the increased applicability and adaptability so necessary to his effective functioning in a late 20th century technology?

Before finding solutions to these questions perhaps one must first examine the meaning of vocational-education and its place in the secondary school. Speaking to this point, Marvin J. Feldman of The Ford Foundation said:

> . . . vocational education at least in part is that aspect of an educational experience which helps a person discover, define, and refine his talents, and to use them in working toward a career. This definition sees vocational education embracing, but not confined to, development of manual skills; it sees such skills used not merely to prepare for tasks, but as alternatives or supplements to verbal skills in the entire learning process. The definition requires, regardless of the educational level, an opportunity to learn and demonstrate learning in non-verbal ways, learning the relation between the educational program and the purpose and nature of work, developing a faculty for continuing growth, and the ability to work with, not merely alongside, others.[2]

Secondary schools should be concerned with curriculum development programs in vocational-technical education that are structured to provide for teaching the concepts that will more realistically lead to a full comprehension of present-day technology and must provide the job preparation or college specialization needs of our youth. The secondary school should afford students equal opportunities for fulfilling their educational needs both as individuals and as members of a democratic society. Programs are needed which challenge the full range of aptitudes, stimulate imaginative thought, and are significant for the success of each student.

We must demand programs where imaginative research and experimentation are commonplace and where rote skills play only a limited part. And above all, we must avoid programs which may result in a lack of general education for the student or lead to an educational dead-end.

More specifically, the educational experiences of the vocationally-technically directed youngster should provide him with:

1. The general knowledge and basic skills necessary for initial entry into the world of work, for successful occupational adjustment, and for effective performance of social and civic responsibility.
2. A sound basic education in the disciplines vital to occupational performance. At a minimum, this should include English, math, science, and social studies. Understandably, the depth of study within each of these areas will depend upon the ability of the student and the level of his occupational aspirations.
3. The abilities and attitudes necessary to independent and group functioning, i.e., self-direction, cooperation, acceptance of responsibility, ability to weigh alternatives and make decisions, self-confidence, and other qualities of similar nature.
4. The ability to identify and isolate vocational-technical tasks, relate knowledge and skills to the task, collect additional information which may be necessary, and apply himself to the satisfactory solution of the task.
5. Attitudes which reflect pride in and respect for the world of work.

If these are to be the outcomes of occupationally oriented programs, what must be the nature of such programs? What principles should guide us in the organization of the curriculum, the design of facilities, the treatment of pupils, and the use of teachers?

In our opinion, we must begin by placing the pupil at the very center of the learning process. Around his needs and interests objectives must be established and learning experiences designed. It is for the pupil that the school exists and we must recognize this. All aspects of the educational program must be adapted to and shaped by his growth and development. Meaningful learning is a product of and should emanate from personal involvement of the student. He should be an active participant in the learning process, not a passive observer. Learning should stress "pupil doing" rather than "teacher doing." Programs of instruction should foster experiments, research, exercises, and various opportunities for solving many different types of problems as well as project making. They should involve learning experiences which stress logical and critical thinking through the solution of problems which cut across subject lines.

The pupil should be allowed to progress at his own rate. We should challenge and stimulate but not force. The able student should not sit idly nor should he engage in busy-work. The less able should never be allowed to fall hopelessly behind while being asked to perform at a pace far above his ability level. Through non-graded or continuous growth programs, together with learning experiences geared to individual abilities, pupils can be assisted in progressing at their own rates.

The pupil should be given a degree of freedom. If he is to pursue interests, learn at his own rate, develop self-direction, and learn to function as an independent individual he must be given the freedom to do so. He should be allowed to discover strengths and weaknesses, to fail, to succeed, and to experiment with a wide range of personal abilities. If he is to do this he must be freed, at least for a part of the day, from the narrow and restrictive framework characteristic of traditional systems.

If the pupil is to be free to "do," free to pursue the satisfaction of individual needs, and free to progress at his own rate, then his learning environment must provide for this freedom. This means that both the physical facility and time schedules should be flexible. Effective learning demands a varied use of time. As the learner involves himself in educational experiences, he should be allotted time according to the demands of the activity and not according to some fixed schedule which breaks time into standard segments and allows no flexibility whatsoever. Too often, an idea is killed and enthusiasm is destroyed by the bell. Too often, meaningful activities are never initiated because it is realized that there is not enough time in the period. Too often, a youngster is forced to sit ineffectually through fifty minutes of math instruction he does not need when he desperately needs to spend this time in the study of English. Through the establishment of blocks-of-time by means of modular or other forms of flexible scheduling, time can be better suited to the learning process.

The physical facility, too, should be flexible to the extent that it provides pupil mobility and easy access to all elements of the learning experience. The learner should be free to pursue knowledge according to his interest and abilities and the physical environment should facilitate this to the optimum degree; certainly it should not hinder learning. This suggests openness, movable partitions which easily create areas for large and small group instruction and independent study, and the availability of all necessary items of equipment and materials. It suggests pupil movement within this facility without unreasonable restriction. And, desirably, it suggests that the vocational-technical facility include, or be adjacent to, instructional personnel and resources of other essential disciplines -- math, science, English, and social studies.

The treatment of subject matter must be flexible. At any given level it must be adapted to the occupational, social, emotional, and psychological needs of the individual. Subject walls and grade restrictions must be removed. Learning experiences should feature activities which draw upon subject matter from all fields, thereby integrating learning and providing comprehension, retention, and facility in doing so. Much of education today is, without doubt, disintegrative. In our eagerness to select the basic essentials from the rapidly accumulating mass of knowledge, we have dissected, dehydrated, and filtered until all that remains is a collection of isolated fragments.

And in our eagerness to transmit these fragments to the pupil with dispatch and efficiency, we have employed methods which relieve the pupil of all necessity for mental activity. He does not digest, evaluate, relate, reason, or decide. Rather, he accepts, memorizes, and regurgitates at the presentation of some cue, usually predetermined. Much of learning today is nothing more than a process of accumulating a mass of meaningless fragments which are presented in isolation and are retained in isolation, if they are retained at all. The student has been led to believe that learning is to be retained only long enough to pass an exam or to meet the requirements for a diploma. It is to be left within the walls of the school at the end of the day and by no stretch of the imagination is it to affect behavior outside the classroom or be employed in the solution of practical problems.

If our schools are to provide the youngster with an education which is comprehensible, retainable, and applicable they must expose him to learning experiences which establish meaningful relationships between the individual and various facets of his formal education and his world of work. This means that knowledge must be related to knowledge -- fact to fact, fact to skill, skill to concept, and each in turn to the total experience; knowledge must be related to intimately familiar past experience; and knowledge must be related to vocational-technical occupations and occupational tasks appropriate to the individual's ability and interests. Through the establishment of such relationships the individual sees meaning and purpose in education, he is motivated to learn at his ability level, he attains and retains at a much higher level, and he gains command and facility in relating and applying his formal education to life outside the classroom.

While subject matter must be kept flexible so that it might be suited to individual needs, it must also give direction to the individual. This implies three things: 1) the curriculum must be shaped to the needs of the individual in terms of his probable level of vocational-technical function, 2) the program of education must be vertically articulated from the beginning of vocational-technical preparation through and into employment, and 3) the program must provide a visible link between the individual, his "port of entry," and his ultimate goal within the world of work.

By suggesting that the curriculum be shaped to the occupational needs of the individual, we do not propose a "watering down" of courses. Rather we propose a redesign of educational experiences more in keeping with the needs and abilities of the individual and more appropriate to the demands of vocational-technical occupations within the late 20th century. We must make a serious effort to determine the skills and knowledge which will be demanded at various levels of vocational-technical employment and from this we must determine, classify, and state in measurable terms the specific objectives which will give direction to the design of learning experiences and serve as a basis for diagnostic evaluation. ". . . all too frequently educational objectives are stated as meaningless platitudes and cliches."[3] Within the recent past, serious efforts have been made to provide a taxonomy through which educational objectives can be classified, stated in measurable terms, and directed toward the attainment of specific pupil outcomes in cognitive, affective, and psycho-motor domains.[4] The employment of this technique not only gives direction to the design of learning experiences but focuses our attention on all domains essential to the education of the learner. In vocational-technical education in particular, where we are sometimes guilty of placing too much emphasis on the development of psycho-motor skills at the expense of the cognitive and affective domains, we must give more attention to the identification of a complete and comprehensive list of specific objectives which give direction to his educational program and prepare him for effective functioning as a member of America's work force. Increasingly, we are recognizing the importance of attitudes, interests, and values; and increasingly, we are recognizing the importance of cognitive attainment in effective occupational performance. A larger share of learning experiences must be directed to the satisfaction of such needs.

Our failure to state comprehensive lists of specific measurable objectives has resulted in a tendency to engage pupils in learning activities directed at the attainment of nothing in particular. Without objectives to guide the design of learning experiences it stands to reason that there will be little direction in the learning process. And this is true: Much of education today -- especially for the non-college bound youngster -- is nothing more than a hodgepodge of courses designed to achieve the number of credits required for graduation.

A persistent weakness in programs of education, particularly those for youngsters directed into vocational-technical occupations, has been the lack of vertical articulation between the various stages of preparation. Even where schools have made the effort to close the gap and provide for easy movement from one level to the next, they have done so only within the program of formal education. The gap between formal education and the world of work has been left glaringly open. This situation can be attributed largely to the lack of communication and cooperation between the institutions and agencies directly concerned with the vocational-technical preparation of the individual. Consequently, the curriculum does not provide an orderly transition from the classroom to the job or to programs of continuing development. Programs of vocational-technical education must be the product of continuing study and cooperative development between secondary schools, community and/or technical colleges, institutions of higher education, and business and industry. Only through such efforts are we likely to provide the individual with programs of education which are meaningful and effective from beginning to end.

Although the lack of a program which has been shaped to the needs of individuals in terms of their probable occupational functioning and one which has been properly articulated vertically is a severe shortcoming within itself, it is our feeling that another weakness in present-day vocational-technical education is the failure of many schools to offer the special kind of occupational orientation and direction which is demanded by many youth. Many youngsters fail to see any real purpose in their educational program. Few see any relationship between the various subjects they take and the occupational tasks they will perform. Jobs or careers are only vague promises which may or may not materialize. Many of these youngsters are products of broken homes, homes from which there is little encouragement, or homes which do little to build aspirations and ambition. For many of them, the only hope of motivation, of aspiration, is that the school might build a real and visible link between the individual and an occupational future which is acceptable to him. For some individuals, particularly those from lower social levels, this must be a very personal link. Such individuals may need to know that there are specific occupations and careers available to them. They may need an intimate familiarity with a specific job and its demands. They may need to know that their formal education, subject by subject, is necessary to the attainment and performance of a job. And they may need assurance that the school and its teachers will be with them all the way in the attainment of satisfactory employment. This is not to say that all individuals must have this very personal assurance, nor is it to suggest that individuals should be identified and locked into a vocational track in separate, special type schools leading to a specific job. It is to say that personal identification with a career and the knowledge that his formal education is a vital factor to satisfactory adjustment within that career is highly motivational for many youngsters. And where they underachieve, schools must somehow provide this motivational link. Study trips, industrial or business internships, and other techniques which provide meaningful personal experience are particularly valuable in building aspirations and in visibly relating the individual to the world of work.

Finally, it is worth repeating that students should not be locked into highly structured vocational tracks in separate, special type schools. Curricula should provide appropriate balance and relationship between the vocational-technical programs and the general education program. The tendency should be toward including broad ramifications of the subject with emphasis on basic principles and concepts. No longer can there be complete satisfaction in exploration of the known -- educational experiences in our schools must reflect adventures in the unknown likewise. Today, with the vast and rapid accumulation of knowledge, no longer is it desirable to teach isolated facts and knowledge. Knowledge must be organized in such a manner as to show the relationship of each fact to the total experience. An organized study must categorize understandings rather than categorize isolated facts. Concentration upon the acquisition of concepts rather than emphasis on specifics should be our goal. This approach to learning is sound.

In looking at the tasks of education and in describing educational programs appropriate to these tasks, we have gained considerable insight into the nature of the teaching process and, more specifically, the nature of the teacher himself. If he is to be effective in working with individuals who will enter a late 20th century work force, we believe the teacher must have the special attitudes and abilities outlined below.

First, the teacher must be a highly capable person. He must be mature, intelligent, insightful, and ingenious. He must be a professional, committed to the task of educating America's youth in the face of an exploding population, the fight for freedom, and an everchanging future. There can be little doubt that the teacher is the most vital cog in the learning process. While buildings, equipment, curriculum organization, and other factors are important, none is more important than the teacher. "Institutions are made up of people, and it is the behavior of teachers in the classroom that will finally determine whether or not our schools meet or fail to meet the challenge of our times."[5]

The teacher must be pupil oriented. He must place the pupil in the "center ring" and his every effort must be directed to the total development of the individual. This means that he must give attention to the social, emotional, and physical as well as the intellectual and occupational growth of the pupil. The teacher must be aware of and concerned with individual differences and he must provide for progress at individual rates. He must gear instruction to individual needs, challenging and enriching the life of the superior, providing constructive experiences for the average, and offering encouragement to those of low ability. He must stimulate the underachiever and build aspirations where none exist, and he must accept responsibility for and be capable of giving guidance and counseling where such needs are not otherwise being met.

The teacher must be skilled in the identification of specific measurable objectives in keeping with the needs of the individual within a highly complex and rapidly changing technological society, in designing and directing meaningful, comprehensive, and motivational learning experiences appropriate to the attainment of these objectives, and in the accurate evaluation of pupil progress and teaching effectiveness. To identify pupil objectives he must have a thorough knowledge of the individual -- his behavioral patterns, his needs, his maturity level, factors which contribute to the development of self-concept and other social and cultural factors which affect his motivation and attainment. Also, the teacher must be thoroughly familiar with occupations and the educational demands of such. Through such knowledge the teacher is better able to determine the specific skills, attitudes, and understandings necessary to the success of the individual.

To design and direct appropriate educational experiences, the teacher must have a thorough knowledge of educational psychology and the theories of learning. He must have a knowledge of the instructional value of various forms of educational media and be capable of using a wide variety of such items in classroom instruction. This includes: printed materials, resource persons, environmental resources, audio-visual materials, teaching machines, programmed materials, electronic retrieval devices, and other materials of a similar nature. The teacher must be familiar with various techniques of grouping pupils for maximum effectiveness, such as large group --small group, heterogeneous and homogeneous groups, independent study in individual or grouped situations, and in ungraded or continuous growth systems. If the teacher is to skillfully select instructional materials, instructional approaches, physical settings, and grouping arrangements and blend these into a meaningful learning experience, he must not overlook his personal role as the key element within the learning process. Teaching is extremely personal and the teacher must select his materials and methods with this in mind. He must be fully aware of his strengths and weaknesses as he designs the learning experience. Combs speaks to this point when he says:

> A good teacher is first and foremost a person, and this fact is the most important and determining thing about him. He has competence, to be sure, but not a common set of competencies like anyone else . . . each (teacher) stands out as a person, an individual, some for one reason, some for another. Each . . . (has) his own peculiar methods, values,

and techniques. Good teaching is like that, an intensely personal thing.[6]

If the teacher is to be effective he must work with precision. Occupational tasks are becoming more complex and more demanding. More is expected of the employee than ever before and if the schools are to live up to their responsibility, teachers must perform with a much higher degree of efficiency. They must become instructional specialists, persons who can analyze instructional situations, prescribe specific techniques, and employ these techniques with great precision.

The teacher must have the ability to function effectively under a variety of circumstances in highly flexible and constantly changing instructional settings. The trend is away from the one-teacher, one-subject, one-room, one-period concept. The airtight compartments are being broken down. "Canned courses" based on the ground-to-be-covered concept are disappearing. Schedules and physical facilities are being made increasingly flexible and in many schools the system of bells has already been discarded. Grade barriers are being removed and pupils are allowed greater opportunity to move within subjects at their own pace. Pupils are given much greater freedom to learn for themselves and to pursue special interests. Teachers work cooperatively in the planning and direction of learning experiences which cut across subject lines and integrate learning. The school doors are being opened as pupils venture into the real world of business and industry and relate formal education to practical life. Indeed, the teacher of the future must be pliable and capable of working effectively in a wide variety of instructional situations.

Not only must the teacher have the capacity to adjust to changing demands, he must be an agent of change. He must be aware of the times. He must be in the forefront of technological advancement, changing occupational needs, and the implications of such for education. He must suggest new directions, initiate new programs, and sustain a continuing effort to evaluate and redesign learning experiences in terms of changing times.

If teachers of vocational-technical education are to develop the abilities and attitudes outlined above, our programs of teacher education must change, and change significantly. It is our belief that programs of the future will embody such features as the following:

1. Greater selectivity. Programs of teacher education must be more selective. We must establish minimum standards and devise and apply screening techniques which permit entry only to those individuals having the potential to become truly professional teachers. Such selectivity will necessitate the finding of ways to attract larger numbers of people having this potential and it will demand a more efficient use of those available.

2. An extended and balanced curriculum. The curriculum must be extended to provide an appropriate balance and relationship among professional, liberal, and special subjects. Frequently there has been a lack of liberal and professional experience to complement vocational experience in the preparation of vocational-technical teachers. To know his subject is not enough. The teacher of the future must have a thorough knowledge of educational and adolescent psychology; he must have a sound academic education within the areas of science, math, English, political science, sociology, economics, and other subjects directly related to the world of work; and he must have learning experiences which develop self-direction, logical and critical thinking, and the efficient use of knowledge in solving environmental tasks. Only through a broad-based, well-rounded education will the teacher of the future be effective in designing and guiding pupils through learning experiences which equip them for the complex and changing world they face.

3. An individualized program. Teacher education curricula should provide flexible and individualized programs of study adapted to individual competencies and special needs

of students.

4. An all-university approach which coordinates, articulates, and correlates instruction. The teacher is a product of the total university and his preparation should be the result of a coordinated, cooperative effort which begins with the identification of teacher competencies and draws upon the total resources of the institution in achieving the desired outcomes. The individual's preparation should be vertically articulated so as to provide a smooth transition from the secondary school, through pre-service preparation, and into the early years of teaching. And, perhaps more importantly, the individual should have an integrating, unifying learning experience. Rigid subject barriers must be broken down and instruction must be correlated through an interdisciplinary approach.

5. The development of precise instructional skills through laboratory experiences. Much of the professional methodology of the teacher should be developed within a laboratory setting which provides opportunities for intimate personal involvement with all aspects of the teaching-learning process and facilitates the development of individual teaching competencies. Among other things, a well-equipped, flexible laboratory will greatly facilitate the development of skill in:

a. The identification of measurable objectives which reflect pupil needs in the psychomotor, affective, and cognitive domains.
b. The design and use of instructional techniques through individual and group experimentation with a wide variety of materials, equipment, physical arrangements, time schedules, pupil groupings, approaches to cooperative teaching and planning, and other factors which affect learning.
c. The selection and application of precise instructional techniques which initiate specific pupil responses and are effective in the attainment of specific objectives. Through the use of clinical approaches which employ such techniques as micro-teaching, verbal and nonverbal interaction, instructional paradigms, and similar methods it is possible to break down the seemingly complex act of teaching; and, in so doing, we can concentrate on the development of specific and precise instructional skills. The use of electronic devices makes possible not only expert analysis and prescription but self-appraisal as well.
d. The diagnostic evaluation of pupil progress and teaching effectiveness with immediate opportunities for the redesign of learning experiences.

6. Full-time, on-the-job teaching internships. While the employment of clinical approaches will provide experiences valuable in the development of instructional skills, the prospective teacher should have at least two on-the-job internships under actual conditions. These experiences should be especially selected according to the needs of the individual and should be supervised by practicing professionals.

7. Full-time, on-the-job work experiences. Teacher preparation programs in vocational-technical education should provide for an intimate, up-to-date knowledge of the world of work. This is especially important for those individuals with limited vocational experiences. Through vocational internships or similar means the teacher can keep himself informed with regard to the trends, processes, and changing conditions within his area of specialization.

8. Continuing programs of in-service education in cooperation with and suited to the needs of a particular school or school system. Programs of teacher education must place a greater emphasis upon the continuing education of teachers, and, with the diversity of instructional approaches employed by schools across the country, such programs must be offered in cooperation with and suited to the

unique needs of a particular school or school system. As complex and varied as is the teaching process today, teachers cannot be properly prepared within a four or even five year program followed by a sprinkling of additional courses taken periodically throughout the individual's career. And they cannot be prepared on university campuses completely isolated from the schools in which they teach and the work-world for which they prepare pupils. Programs of in-service education must go into the schools and into the world of work, they must be planned programs of continuing education, they must be designed to meet the needs of a particular group of teachers as determined by the instructional program they offer, and they must be provided through the joint efforts of all agencies directly concerned.

9. A cooperative partnership between secondary schools, community colleges, business and industry, and the institutions of teacher preparation. The job of teacher preparation today is too big and too complex for the teacher preparatory institutions alone. The education of the teacher must be articulated, correlated, extended beyond the confines of the campus, and continued throughout his career. A meaningful and realistic teacher preparation will be possible only through a concerted, cooperative effort of all these agencies.

Indeed, the teacher of the future must be a new breed --

> . . . capable of shifting and changing to meet the demands and opportunities afforded in daily tasks. Such a teacher will not behave in a set way. His behavior will change from moment to moment, from day to day, adjusting continually and smoothly to the needs of his students, the situations he is in, the purposes he seeks to fulfill, and the methods and materials at his command.[7]

If cultural, social, philosophical, and technological changes in our society make it imperative that innovation and change take place and if change and improvements are to be accomplished, teacher education would seem to hold the key. But, actually, this can only be true if readjust it does.

FOOTNOTES

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[1] Francis R. Allen and Delbert C. Miller, et. al., Technology and Social Change (New York: Appleton-Century-Crofts, Inc., 1957), pp. 245-249.

[2] Marvin J. Feldman, Making Education Relevant (New York, The Ford Foundation, 1966), p. 5.

[3] David R. Krathwohl, Benjamin S. Bloom, and Bertram B. Masia, Taxonomy of Educational Objectives: Handbook II: Affective Domain (New York: David McKay Company, Inc., 1964), p. 4.

[4] Ibid., pp. 1-193.

Benjamin S. Bloom (ed.)., Taxonomy of Educational Objectives: Handbook I: Cognitive Domain (New York: David McKay Company, Inc., 1956).

Robert F. Mager, Preparing Instructional Objectives (Palo Alto, California: Fearon Publishers, Inc., 1962).

[5] Arthur W. Combs, The Professional Education of Teachers (Boston: Allyn and Bacon, Inc., 1965), p. v.

[6] Ibid., p. 6.

[7] Ibid., p. 9.

James J. Hammond*

REACTION

"But Readjust We Must. -" is a comprehensive and objective presentation of the factors affecting both vocational education and vocational teacher education. In their paper, "Directed at Change in Teacher Education" authors Minelli and Benton leave no doubt about the need for change. They advocate newer practices and procedures which, if adopted, would certainly improve the quality of teacher education. They list forces requiring change such as the knowledge explosion, automation, extensive and unique discoveries associated with out-of-space developments, the emphasis in occupations on knowledge rather than muscle power and psychomotor skill.

One might point up the thrust of the authors' presentation by paraphrasing a paragraph. Does change in vocational teacher education have a direction? If so, what is it, and is it likely to continue in the future? Can we plan for it? The authors challenge vocational teacher educators to prepare for adjustments that are inevitable. They dare to propose for vocational schools greater emphasis on cognitive and affective domains as well as an adequate amount of the psychomotor. They make a strong case for changes in curriculum, method, organization and a faculty which will more fully recognize the needs, purposes and interests of students in vocational schools.

The authors refer to a new breed of very capable, imaginative, creative vocational teachers whose principal characteristics are resourcefulness and versatility, who recognize the centrality of the student in the learning process, the need to facilitate freedom and flexibility in program, schedule, course boundaries, and facilities and, who adjust content and methods to the needs and interests of their students.

Minelli and Benton outline the special attitudes and abilities which, in their belief, the vocational teacher of tomorrow must possess. The list is comprehensive and impressive although overwhelming. All the qualities listed are highly desirable but it would be unrealistic to expect that the model presented could be supplied in sufficient numbers to staff the nation's vocational schools. Even with the proposed high level of selectivity where, hopefully it would be possible to screen out all but those who have the potential to become "master" teachers, the goal is overly idealistic. The authors are quite realistic though, in their proposal of a team composed of para-professionals along with a "master" teacher. This proposal appears to have considerable potential. It is a very practical and challenging thought that the concept of teacher assistants, technicians, or adjunct instructors could be applied to vocational teaching. Certainly a group of craftsmen, each of whom would possess a particular body of technical skills and knowledge essential to the kinds of experiences in which students and faculty would be involved could make an effective teaching team. These team members could be prepared to analyze instructional situations, prescribe specific techniques and demonstrate the application of those techniques with dexterity and precision. Another member of the team should be a person well prepared in the theory and the utilization of instructional media. This team should be skilled in individualizing instruction, concerned with the total development of students and give due emphasis to the social emotional and physical considerations as well as the intellectual and occupational growth of students.

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The problem of vocational teacher selection is of long standing. In 1912, Charles A. Prosser in his annual report to the Board of Education stated: ". . . The problem of the training of teachers calls for serious consideration."

"What seems to be needed is some way, or ways, whereby the teacher with large scholastic preparation may be induced to secure the acquaintanceship with industry necessary to successful teaching in industrial schools; and also whereby the skilled workman may obtain the knowledge of technical subjects and the skill in imparting instruction which he lacks. Suitably equipped teachers for State-aided schools are difficult to secure. In the near future some method of systematic training of teachers should be provided."

"Experience shows that the best results in vocational education are secured when the teacher has had the same kind of experience as that for which he is preparing the pupil. Abstract and theoretical instruction, whatever may be its worth in other kinds of education, is of very little value in the training of the students with whom the State-aided schools deal. Such students learn largely by doing, and they have the ability to grasp methods and principles best when these are taught them through the applications which the work in the school shop, or in the day employment of the worker, makes possible . . . ."

At one time collegiate preparation of teachers of vocational education was considered inappropriate, if not consistent. The greatest emphasis was laid upon the trade, occupational or industrial experience. Certainly proficiency in the requirements of the occupational field ranked high on the list of essential competencies. Invariably such competencies have been obtained through work experience. The number of years of experience it takes to obtain adequate competency is a moot point. It is also debatable that such experience must be acquired prior to professional and liberal studies being undertaken. There is considerable evidence of the merits of a cooperative plan of work experience and teacher education superimposed on a program of general education.

In 1938 Thomas L. Norton, in his book Education for Work wrote the following: "In the early days of the industrial education program it was necessary for vocational industrial educators to assume the task of training teachers; but this program is not in its infancy, nor is it an unchartered field . . . . Its importance would warrant equal status with other types of teacher training . . . ."

He went on to state that, "professional training in the field of vocational adjustment should be given in approved institutions, either public or private. It would seem that the important consideration is not whether the training is given in a public or private institution, but rather whether the work is being done effectively. For this reason, the program should not be restricted to, say, public institutions."

He further stated that, "one provision should be the requirement of apprenticeship teacher training as a definite part of the program."

A report taken from the Industrial Teacher Education Directory of 1966 reveals that approximately 70 percent of the state departments of vocational education have delegated the responsibility for trade and industrial teacher education to one or more colleges or universities within their respective states. In about 25 percent of these cases state department personnel also participated in the teacher education program. Usually the collegiate teacher education program, at least in trade and industrial education, is restricted to courses in professional education and in general education.

The concept that the preparation of a teacher is an all college responsibility is widely accepted. The predominant program is an integral part of higher education. The usual program is designed to facilitate an effective merger of the general and professional aspects of education. Probably the most important characteristic is a built-in provision for continuous, vigorous criticism, a condition which is apt to prevail in an institution where scholars representing a variety of dynamic disciplines are engaged in teaching, research and experimentation.

If vocational teacher education is to enjoy equal status with all other teacher education programs it should be assigned to a college or university. Obviously the institution would be expected to have on its staff competent scholars in the several aspects of vocational education. The vocational curriculum must correspond with that of other teacher education curricula with some of the courses enrolling majors from other fields as well as majors in vocational education. The concept of vocational teacher education should aim at the preparation of well rounded students of education rather than well trained technicians. Professional courses should be rooted in psychology, biology, sociology and philosophy and should be at least interrelated with a sound general education program. Vocational teachers need general education as much as do majors of other fields. The program should be more than a series of introductory courses in established disciplines. Courses should aim at the conceptualization of basic principles, major contemporary issues, noteworthy events and great achievements. Vocational teachers should have an acquaintance with great scholars in the sciences and humanities as well as with the leaders of government and industry. The curriculum should contain a good measure of laboratory courses in the physical and natural sciences, a solid background in mathematics and some concentration in the social and behavioral sciences as well as thorough preparation in the technical skills and knowledge of the field of specialization. Hopefully, the vocational teacher would be well informed about those aspects of the history of technology, of labor, economics, and of government which have shaped the direction and the character of modern technology and culture.

The vocational teacher must be prepared to organize a program around concepts which will lead his students to a full comprehension of present day technology. The learning experiences should feature activities which draw upon content from all subject matter fields, thereby integrating learning and providing both comprehension and retention. Emphasis should be given to the development of those interests and abilities that will enable the student to continue to grow, to learn by himself in whatever activity he may be engaged. There are abilities and skills generally useful in all fields of endeavor and largely transferable from one to another. The ability to perceive and solve problems, to deal with people effectively, to organize resources, and to work wholeheartedly is essential to success in teaching.

The authors wisely stress the need for a program of continuing education for vocational teachers. In-service education is an essential up-dating process for all teachers but, because of the dynamic character of technology and occupations, it is imperative that those who teach in vocational programs keep posted on the changes that take place in materials, equipment, processes and procedures. Otherwise the occupational preparation of the school could be invalidated. Vocational educators need no prodding on this point. It has been a policy in most states to provide in-service institutes clinics and summer courses for such purposes. Vocational leaders also encourage or may even require that teachers obtain summer employment in order to learn newer practices as well as to maintain their status as craftsmen. It is also essential that the "master" teacher refresh himself periodically with the latest in child study, motivation, instructional practices and curriculum patterns.

It is fascinating to try to visualize the type of physical facility that would accommodate both the variety of experiences and the kind of flexibility proposed by the author. The suggested pupil mobility with easy access to all elements of the learning situation indicates open areas with movable partitions. The equipment should probably not be highly specialized since the program will be in a state of flux. There will probably be a core of equipment suitable for the performance of basic processes which may change in technique but not principle. The physical plant might well resemble a modern factory with a design area, laboratories and production facilities, along with classroom and instructional media centers.

The most effective plan of teacher education for vocational teachers has not yet been discovered. There are still many unresolved issues about what makes a good vocational teacher even though it is well established that he must possess a variety of competencies. In the final analysis vocational education will be as good as those who teach it. It would seem advisable to place the responsibility for such a complicated and critical assignment with the colleges and universities who have the specialized resources and the experience to cope with it.

Jacob J. Kaufman*

CONCLUDING STATEMENT

As indicated in the Introduction the purpose of the seminar and discussions was basically to bring together representatives from the various social and behavioral sciences, from the various educational disciplines, and other interested persons in order to determine the broad areas of agreement among them and which would assist in the development of a vocational and technical program for the Commonwealth of Massachusetts.

It is the purpose of this chapter to attempt to summarize the papers and discussion not only for the purpose of listing the issues but also for the purpose of setting forth the general consensus. If there was one area of consensus it was simply the need to develop an educational curriculum which would meet the broad occupational needs and interests of the youth, particularly those enrolled in the secondary schools. It is quite apparent that these needs are not being met. It is also apparent that curricula must be more consistent with the findings of the various social and behavioral sciences.

In an historical view of vocational education some emphasis was placed on the differences in the views of various vocational educators of the role of the Vocational Education Act of 1963. Some persons viewed it simply as a financial vehicle by which the "starved" curriculum could be expanded. Others saw the legislation as a means by which new areas or skills could be developed. Yet, still others saw it as a grand opportunity to formulate new curricula to meet the needs and interests of a large group of students who had been ignored by the teachers and administrators of the academic and vocational curricula. This latter group of students -- its size has been estimated to include about fifty percent of the secondary students -- have been called "gray area" students. Basically, they represent a group of youngsters who find the curriculum offered them in school totally irrelevant to their experiences.

Will the new amendments to the Vocational Education Act of 1963 charge the educators with greater responsibilities for this group? Will the Commonwealth of Massachusetts, with its resources, allocate its funds in a manner which will truly provide youngsters with equal educational opportunity?

The real issue, however, is the development of an appropriate curriculum. The psychologist suggests that education should be concerned with behavioral objectives, that is, what "we want the learner to be able to do at the end of an educational experience." It is only with such objectives in mind can the decision be made as to what is to be taught. This is where vocational education might, in the judgment of the psychologist, make a significant contribution. It is desirable to make educational experiences relevant not only

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to a youngster's previous experiences but also to his probable later-life requirements.

A significant question to be raised at this point is whether educators, in general, and vocational educators, in particular, are equipped to translate the implications of behavioral objectives in education into specific curricula. It would appear, from the discussion, equipped or not, vocational education does have the potential. The only question is whether it will seize the opportunity.

The sociologist in the discussion attempted "to examine vocational education from a sociological perspective and to underline what efforts need be undertaken to make the world of work more viable and to match the pace of social change." The desirability of approaching vocational education from this point of view becomes clear as we recognize that vocational education has failed to keep pace, regardless of whether the failure was caused from within or without.

From the point of view of an economist, serious consideration was given to the proposition that in the decision-making process consideration must be given to both costs and benefits. No cost is too low or too high unless considered in relationship to benefit. No benefit is "good" or "bad" unless considered in relationship to cost. It was emphasized that the economist can assist the vocational educator in the decision-making process, given the fact that the educator is always working with limited resources. The economist can assist the educator by "his knowledge of the complex inter-relationships that characterize an economic system . . . , and his analytical apparatus for arriving at decisions among alternatives."

The paper of the economist explores at length the various issues involved in cost benefit analysis. An illustration is provided in the area of school dropouts. Consideration is also given to the various factors involved in the decision of skill development between school or at work. Finally, considerable discussion is devoted to the question of the relationship between the manpower forecaster and decisions for vocational education. Here the inherent difficulties in this relationship are explored.

In the area of manpower, in which vocational educators have always expressed great interest, it was pointed out that educational requirements for jobs have tended to be part of a developing "credentialism" rather than specific educational experience. Reference is made to the point that the extent to which "completed education" is desirable, then educational programs should be examined in terms of their "holding power" which would yield a credential in the form of a diploma.

It is noted that the relationship between technological changes and educational requirements is more complicated than is usually reported. Research indicates that jobs at a so-called "middle" level call for education which is "higher-than-needed." In fact, one may discover that as the labor market becomes tighter, educational requirements may be lowered.

With respect to the argument that employers require better-educated persons not for the "entry" job but for future promotional opportunities, research does not necessarily bear out this argument. For this reason it is suggested that vocational educators conduct more research of the work-life history of vocational education graduates.

The implications of this analysis of educational requirements on the job are serious, as they raise a fundamental question of educating (or training) youth in schools along specialized skill lines. It is also suggested that there is considerable need to work with employers and provide adequate guidance for youngsters.

Along what lines should guidance be provided? Should it be one in which "information" is provided the youth and in which the youth are "directed" to occupations for which there is high employer demand? On the contrary, the major emphasis of the guidance people is on assisting youth in arriving at his own decision, on the basis of a self-analysis. It also requires an introduction to situations and information related to life in school and in the adult world. The main point is that guidance should be permissive and non-prescriptive.

If the conclusions of these various behavioral scientists are valid, and indeed the consensus of the seminar was that they were valid, what are the implications for curriculum, educational administration, and teacher training?

In one paper it was suggested that each student should receive a basic education necessary for occupational preparation. But keeping a youngster in school does not guarantee that learning takes place. It must be recognized that students have different learning styles and it is noted that there have been several new curricula developed which are "experience centered." In order to inform youth about "the world of work" reference is made to various junior high school programs which create job "awareness" rather than job "skills." In fact, some reference is made to certain programs of this type in the elementary schools.

It was pointed out that the new programs would probably have less emphasis on vocational education at the secondary level and increased emphasis at the post-secondary level. It is also suggested that there should probably be increased attention paid to training for "clusters" as distinguished from specific skills.

If this is to be the new direction for vocational education what are the prospectives to achieve change? Are the curriculum development specialists and the educational administrators ready for this change?

The paper by the educational administrator urges the vocational educator to recognize many of our urban ills and to develop the appropriate curriculum that will provide an entry into society by the poor. It was suggested that vocational educators have become isolated from the educational and social mainland, for reasons which are both external and internal to vocational education. Here, too, the idea of an "experience-centered" education is being recommended. It is urged that educational administrators strengthen their work with research and adopt new values and skills. Such administrators must diffuse the results of new programs and seek their adoption when their results are positive.

It would appear that educational administrators are confined to routine administrative duties and ignore activities which result in change. But can such changes take place without new directions in teacher education?

The paper on teacher education stressed the need to develop teacher education programs which are carried on in the same manner in which they should be carried on in the schools. Thus, the changes suggested in curriculum in vocational education would call for drastic changes in the institutions for teacher education.

The papers and discussions in this report can provide the broad framework around which the Commonwealth of Massachusetts can develop a vocational, or occupational, training program designed to meet the needs of youth.

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